Mini System

FW595C/21/21M/30

FW555C/22/37

Service
Service
Service

Service Manual

ReWritable CD COMPATIBLE

COMPACT disc DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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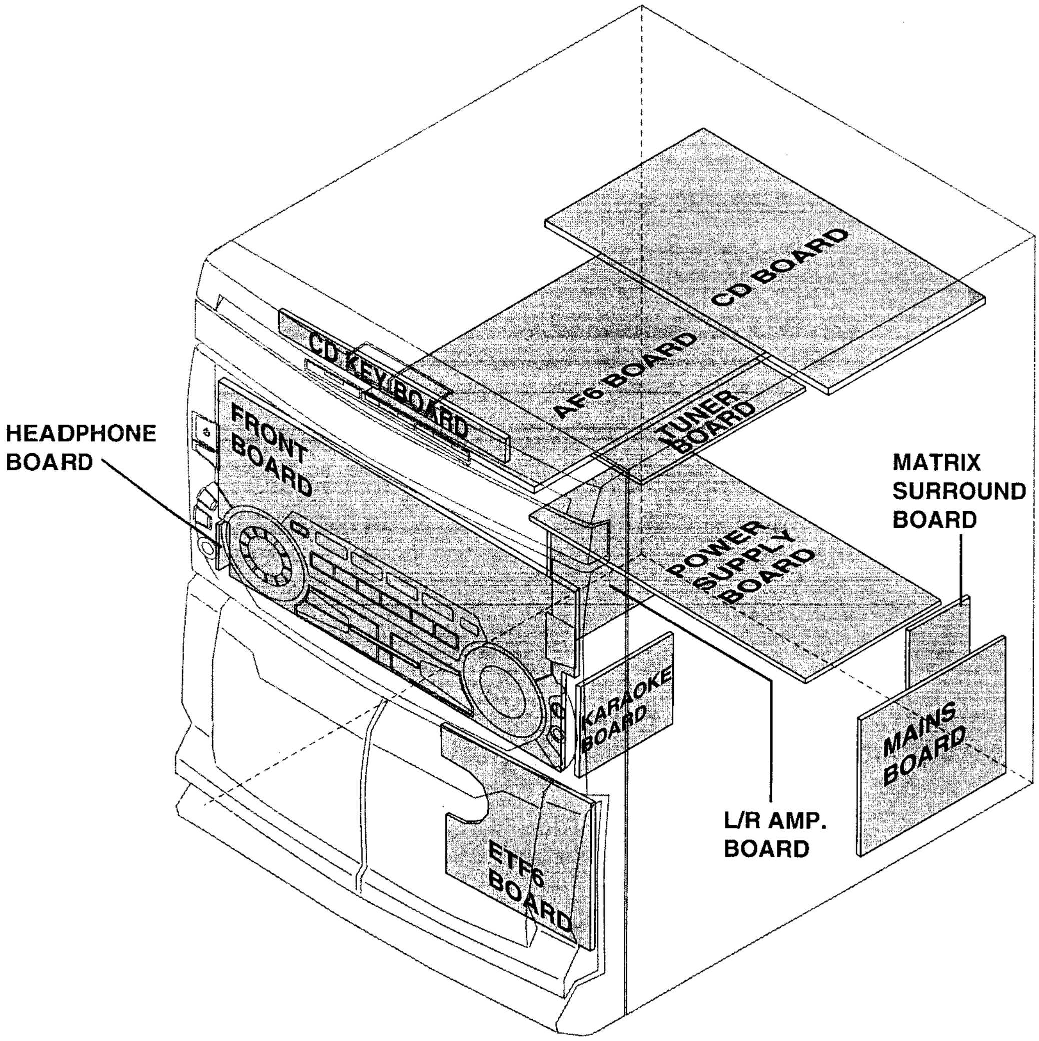
GB 4822 725 26285

PCS 102 693

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS


CD BOARD
CD KEY BOARD
AF6 BOARD
TUNER BOARD
FRONT BOARD
HEADPHONE BOARD
MATRIX SURROUND BOARD
POWER SUPPLY BOARD
KARAOKE BOARD
MAINS BOARD
L/R AMP. BOARD
ETF6 BOARD

VERSION VARIATIONS:

Type /Versions:	FW595C						FW555C	
Features & Board in used:	/21	/21M	/30				/22	/37
Aux In	x	x	x				x	x
Line Out	x	x	x				x	x
Surround Out								
Subwoofer Out	x	x	x				x	x
Digital Out	x	x	x				x	x
Matrix Surround	x	x	x					
Dolby B								
RDS							x	
News							x	
Incredible Surround	x	x	x				x	x
Karaoke Features	x	x	x				x	
Voltage Selector	x	x						
Low Power Standby / LED							x	x
Tuner board - ECO5 Sys	x	x	x					x
Tuner board - Tuner 95							x	
Surround Loudspeakers	x	x	x					

SPECIFICATIONS

GENERAL:

Mains voltage : 100V for /26
110-127V/220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/34
230V for /25
230-240V for /30
Mains frequency : 50/60Hz
Power consumption : < 20W at Standby
FW555C < 130W at 1/8 rated power out
FW595C < 160W at 1/8 rated power out
Clock accuracy : < 4 seconds per day
Dimension centre unit : 265 x 310 x 390mm

TUNER:

FM

Tuning range : 87.5-108MHz
65.81-74MHz for /34
Grid : 50kHz (& 30kHz for /34)
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75ohm coaxial
300ohm click fit for /37
Sensitivity at 26dB S/N : < 7μV
Selectivity at 600kHz bandwidth : > 50dB
Image rejection : > 25dB [> 75dB]
Distortion at RF=1mV, dev. 75kHz : < 3% [< 2%]
-3dB Limiting point : < 7μV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB [> 26dB]

MW

Tuning range : 531-1602kHz
530-1700kHz for /21/21M/37
Grid : 9kHz
10kHz for /21/21M/37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5% [< 7%]

LW

Tuning range : 153-279kHz
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 7.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 26dB]
Image rejection : [> 35dB]
Distortion at RF=50mV, m=80% : [< 7%]

AMPLIFIER:

Output power (6ohm, 1kHz, 10% THD)
FW555C L & R : 2 x 80W
FW595C L & R : 2 x 100W
Surround : 2 x 15W

Frequency response within -3dB : 40Hz-16kHz
Dynamic Bass Boost : BEAT, PUNCH, BLAST, DBB OFF 1)
Incredible Surround : IS ON , IS OFF 1)
Digital Sound Control :
Optimal, Classic, Techno, Jazz, Rock, Vocal 1)

Headphone output at 32 ohm : 15mW ± 2dB

Input sensitivity
Aux in : 500mV ± 2dB at 1 kohm
Microphone : 2.5mV ± 2dB at 600 ohm
Output sensitivity
Line out : 500mV ± 2dB at 22 kohm
Subwoofer out (max. vol.) : 1.5V ± 2dB at 22 kohm

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec -0.8/+1.8%
1.6 x 4.76 cm/sec
Wow and flutter : < 0.4% (IEC)
Fast-wind/Rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb freq. response within 8dB: 80Hz - 12.5kHz
Signal to noise ratio (IEC I) : > 43dB
Signal to noise ratio (IEC II) : > 47dB

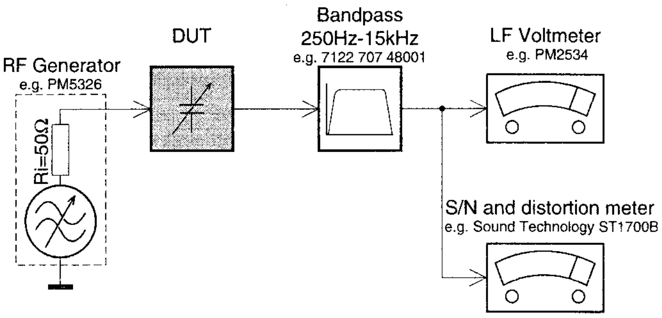
COMPACT DISC:

Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 550mV ± 1dB unloaded
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.5%
Channel difference at 1kHz : < 1dB
Channel crosstalk at 1kHz : > 60dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[....] Values indicated are for "Tuner 95 Board" only
1) Frequency response in each setting is software controlled.

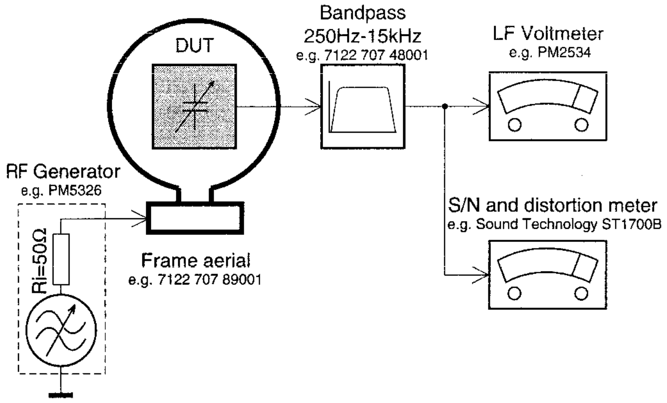
MEASUREMENT SETUP

Tuner FM


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

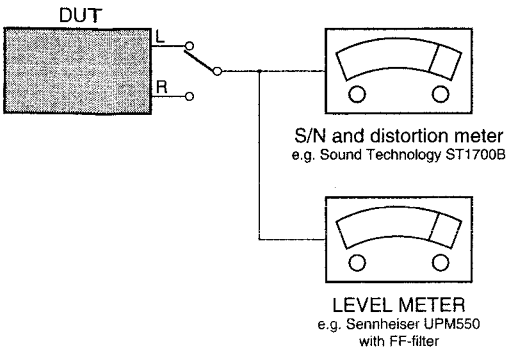
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

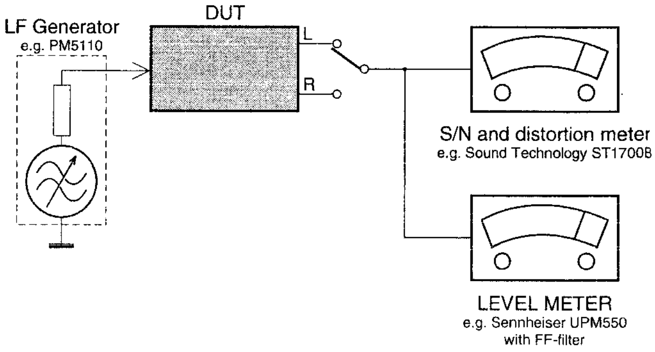
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

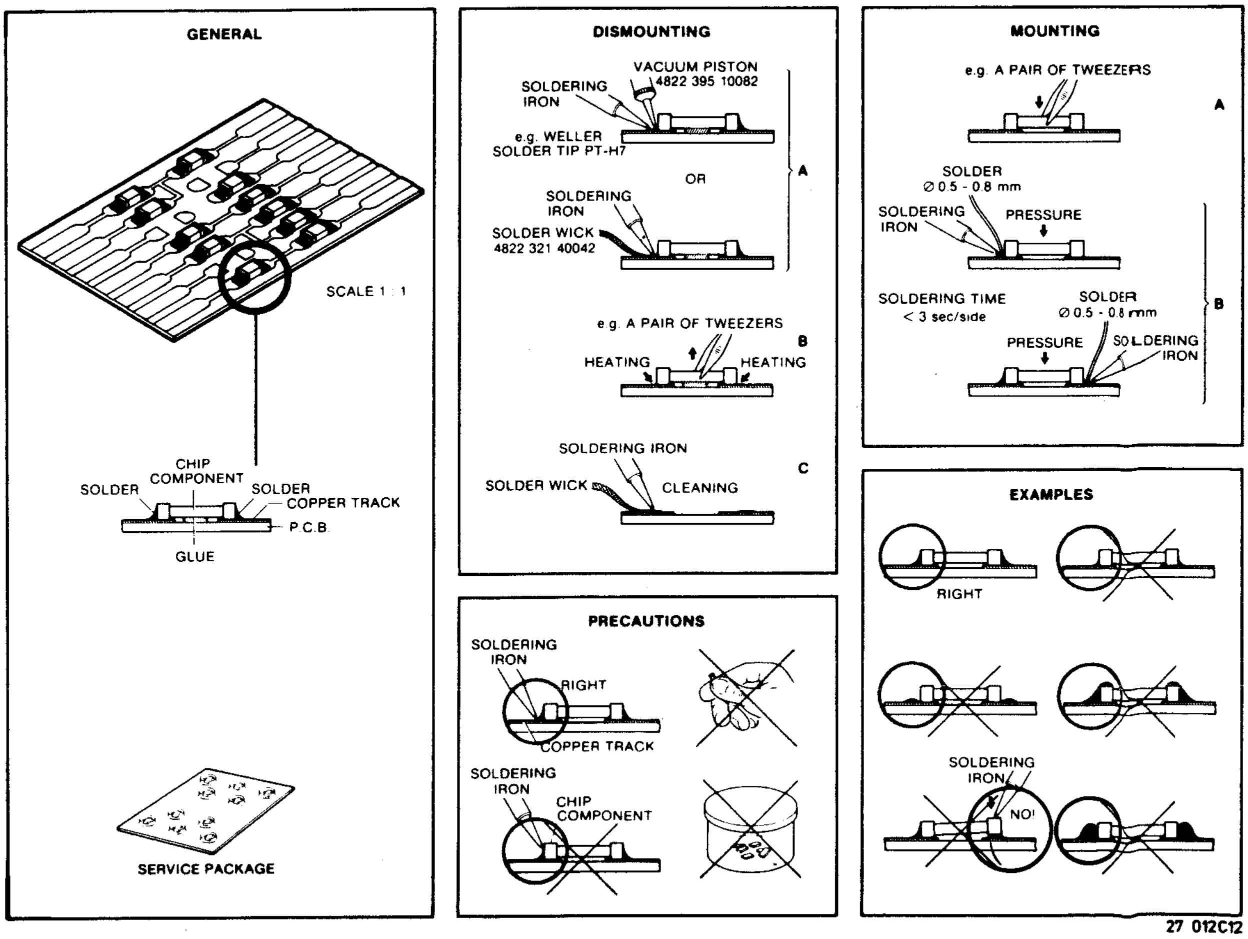
Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS


GENERAL
SCALE 1 : 1
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B
GLUE
SERVICE PACKAGE
DISMOUNTING
VACUUM PISTON 4822 395 10082
SOLDERING IRON
e.g. WELLER SOLDER TIP PT-H7
OR
A
SOLDERING IRON
SOLDER WICK 4822 321 40042
e.g. A PAIR OF TWEEZERS
B
HEATING
HEATING
SOLDERING IRON
C
SOLDER WICK
CLEANING
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER ∅ 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME < 3 sec/side
SOLDER ∅ 0.5 - 0.8 mm
B
PRESSURE
SOLDERING IRON
PRECAUTIONS
SOLDERING IRON
RIGHT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
EXAMPLES
RIGHT
SOLDERING IRON
NO!
27 012C12

ESD

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1
LASER PRODUCT
3122 110 03420

(GB) Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

(DK) Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

GENERAL INFORMATION

SAFETY INFORMATION

IMPORTANT:
PLEASE NOTE THAT THE VOLTAGE SELECTOR LOCATED AT THE REAR OF THIS SYSTEM IS PRESET AT 220V FROM THE FACTORY. FOR COUNTRIES THAT OPERATE AT 110V, PLEASE ADJUST TO 110V BEFORE YOU SWITCH ON THE SYSTEM.

General Information

- ***The typeplate (which contains the serial number) is located at the rear of the system.***
- ***Recording is permissible if copyright or other rights of third parties are not infringed.***

Environmental Information

All unnecessary packaging has been omitted. We have tried to make the packaging easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Accessories *(Supplied)*

- Remote control
- Batteries (two AA size) for remote control
- AM loop antenna
- FM wire antenna
- AC power cord
- SS1 surround speakers *(for model FW548C only)*
- SS30 surround speakers *(for model FW595C only)*

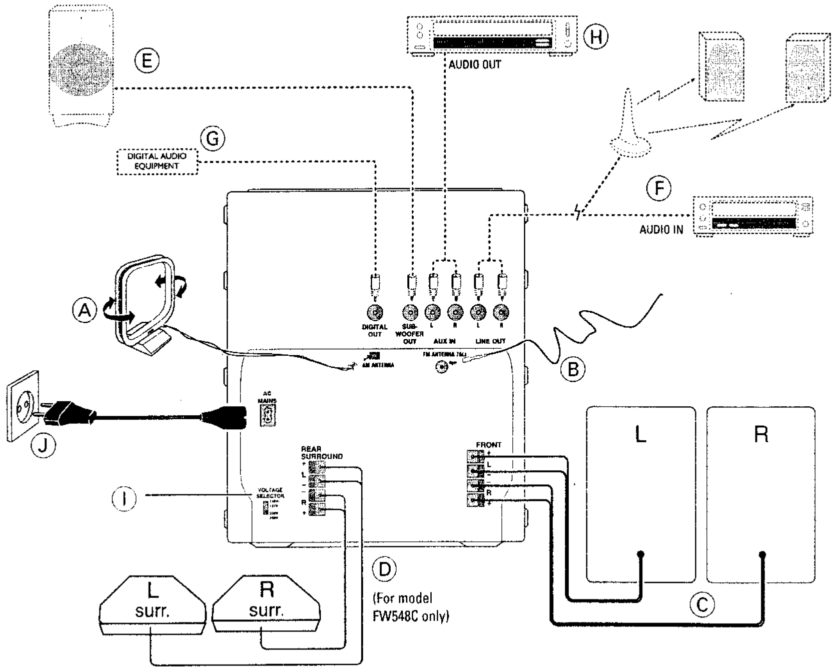
Safety Information

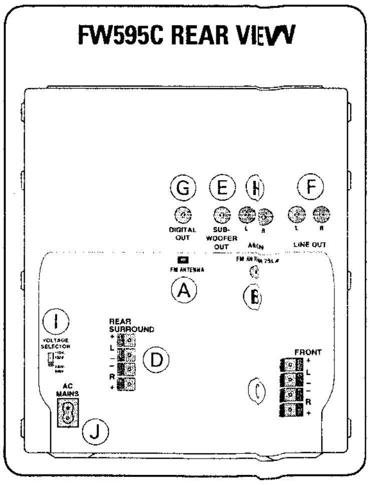
- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The typeplate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system.
- The system incorporates a built-in safety feature that prevents over heating.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the system yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

PREPARATION

Rear Connections

FW545C & FW548C REAR VIEW


E
H
AUDIO OUT
G
DIGITAL AUDIO EQUIPMENT
F
AUDIO IN
A
DIGITAL OUT
SUB-WOOFER OUT
L
R
AUX IN
L
R
LINE OUT
AM ANTENNA
FM ANTENNA 75Ω
B
AC MAINS
J
REAR SURROUND
+
L
–
–
R
+
VOLTAGE SELECTOR
I
FRONT
+
L
–
–
R
+
L
R
C
D
(For model FW548C only)
L surr.
R surr.


FW595C REAR VIEW
G
E
H
F
DIGITAL OUT
SUB-WOOFER OUT
L
R
MAIN
L
R
LINE OUT
FM ANTENNA
FM ANTENNA 75Ω
A
B
I
VOLTAGE SELECTOR
REAR SURROUND
+
L
–
–
R
+
D
FRONT
+
L
–
–
R
+
C
AC MAINS
J

PREPARATION

Ⓐ AM Loop Antenna Connection

Connect the supplied loop antenna to the AM ANTENNA terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

Ⓑ FM Wire Antenna Connection

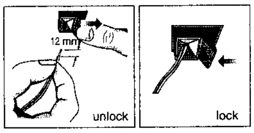
Connect the supplied FM wire antenna to the FM ANTENNA 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna

For better FM stereo reception connect an outdoor FM antenna to the FM ANTENNA 75 Ω terminal using a 75 Ω coaxial wire.

Ⓒ Speakers Connection

- Connect the right speaker to Front terminal R, with the red wire to + and the black wire to –.
- Connect the left speaker to Front terminal L, with the red wire to + and the black wire to –.
- Clip the stripped portion of the speaker wire as shown.


12 mm
unlock
lock

Ⓓ Rear Speakers Connection

(for model FW548C and FW595C only)

Connect the black (non-marked) wires to the black REAR SURROUND terminals and the white (marked) wires to the grey REAR SURROUND terminals.

Ⓔ Subwoofer Out Connection

Connect the optional active subwoofer to the SUBWOOFER OUT terminal. The subwoofer reproduces just the low bass effect (e.g. explosions, the rumble of spaceships, etc.). Be sure to follow the instructions supplied with the subwoofer.

Ⓕ Line Out Connection *(wireless ready)*

You can connect the audio left and right LINE OUT terminals to a optional CD Recorder ANALOGUE IN terminals. This allows you to record in an analogue format.

You can also install additional optional front active speakers away from the system (e.g. in another room) to reduce the inconvenience of running long speaker wires across rooms. You can place as many remote speakers as you like provided they operate at the same radio frequency. Connect the wireless radio frequency transmitter to the LINE OUT terminals. Place the active speakers at your preferred location. Be sure to follow the instructions supplied with the active speakers.

Note:

– Availability of a wireless transmitter and its peripherals is subjected to the approval of local authorities. Please check with your local safety or approving authority.

Ⓖ Digital Out Connection

You can record the digital sound from the CD, through this output, on any audio equipment with digital input (e.g. CD Recorder, Digital Audio Tape (DAT) deck, Digital to Analog Converter and Digital Signal Processor).

Connect one end of the cinch cable (not supplied) to the DIGITAL OUT socket and the other end to the audio equipment with digital input.When connecting the cinch cable, make sure it is fully inserted.

Ⓗ Connecting other equipment to your system

You can connect the audio left and right OUT terminals of a TV, VCR, Laser Disc player, DVD player or CD-Recorder to the AUX IN terminals at the rear of the system.

Ⓘ Adjusting the Operating Voltage *(not available for all versions)*

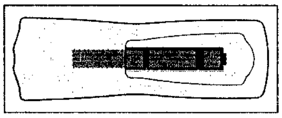
Before connecting the AC power cord to a wall outlet, make sure that the voltage selector at the rear of the system is set to the local power line voltage. If not, reset the selector before connecting to the wall outlet.

Ⓙ AC Power Supply

After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

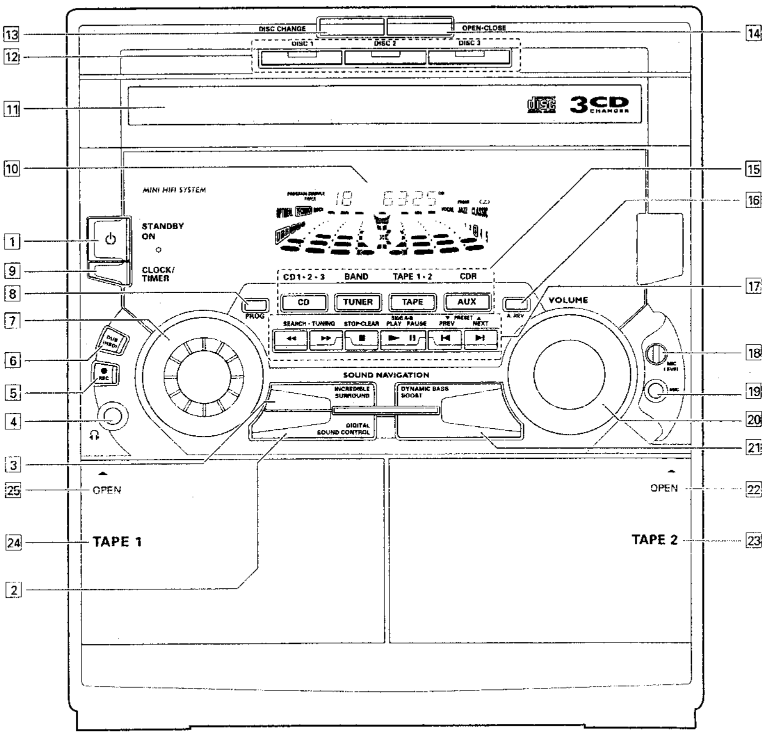
Inserting batteries into the Remote Control

- Insert the batteries (Type R06 or AA) into the remote control as shown in the battery compartment.



- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time. For replacement, use type R06 or AA batteries.

CONTROLS


13
12
11
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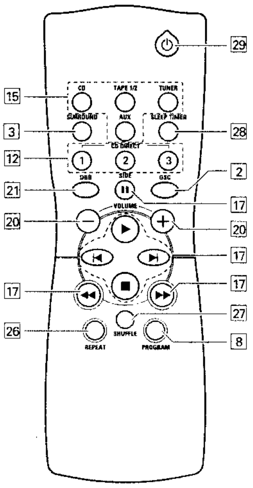
1
9
8
7
6
5
4
3
25
24
2
14
15
16
17
18
19
20
21
22
23
DISC CHANGE
OPEN•CLOSE
DISC 1
DISC 2
DISC 3
3CD CHANGER
MINI HIFI SYSTEM
STANDBY ON
CLOCK/ TIMER
PROG
CD1•2•3
BAND
TAPE 1•2
CDR
CD
TUNER
TAPE
AUX
A. REV
VOLUME
SEARCH • TUNING
STOP•CLEAR
SIDE A-B PLAY PAUSE
▼ PRESET ▲ PREV NEXT
DUB (HSD)
REC
SOUND NAVIGATION
INCREDIBLE SURROUND
DYNAMIC BASS BOOST
DIGITAL SOUND CONTROL
MIC LEVEL
MIC
OPEN
TAPE 1
OPEN
TAPE 2


29
15
3
28
12
2
21
17
20
20
17
17
17
27
26
8
CD
TAPE 1/2
TUNER
SURROUND
AUX
SLEEP TIMER
CD DIRECT
1
2
3
DBB
SIDE
DSC
VOLUME
SHUFFLE
REPEAT
PROGRAM

Controls on the system and remote control

1 **STANDBY ON**
- to switch the system on or to standby mode.
- to use for EASY SET.

2 **DIGITAL SOUND CONTROL (DSC)**
- to select the desired sound effect : OPTIMAL, CLASSIC, TECHNO, JAZZ, ROCK or VOCAL.

3 **INCREDIBLE SURROUND**
- to switch on or off the surround sound effect.

4 🎧
- to connect headphones.

5 **REC (RECORD)**
- to start recording on tape deck 2.

6 **DUB (HIGH SPEED DUBBING [HSD])**
- to dub a tape in normal or fast speed.

7 **JOG**
- to select the desired equalizer display.
- to select the desired DSC setting. You must select the DSC feature first.
- to select the desired level of Incredible Surround Sound. You must select the Incredible Surround Sound feature first.

8 **PROG (PROGRAM)**
- to program CD tracks in CD mode or preset radio stations in tuner mode.

9 **CLOCK/TIMER**
- to view the clock, set the clock or set the timer.

10 **DISPLAY**
- to view the current setting of the system.

11 **CD CAROUSEL TRAY**

12 **CD DIRECT PLAY (DISC 1 / DISC 2 / DISC 3)**
- to select a CD tray for playback.

13 **DISC CHANGE**
- to change CD(s).

14 **OPEN•CLOSE**
- to open or close the CD carousel.

15 **SOURCE** : to select the following:

CD / (CD 1•2•3)
- to select CD mode. When CD playback is stopped, press to select the disc tray 1, 2 or 3.

TUNER / (BAND)
- to select Tuner mode. When in Tuner mode, press to select the waveband: FM or MW.

TAPE / (TAPE 1• 2)
- to select Tape mode. When tape playback is stopped, press to select either tape deck 1 or 2.

AUX / (CDR)
- to select sound from an external source (e.g. TV, VCR, Laser Disc player, DVD player or CD Recorder). When in Aux mode, press to select either AUX or CDR.

16 **A. REV (AUTO REVERSE)**
- available in tape deck 2 only.
- to select the desired play modes (⊐ / ⊐ / ⊂⊐).

17 **MODE SELECTION**

SEARCH ◀◀ ▶▶ (TUNING ◀◀ ▶▶)

for CD .... to search backward/ forward.
for TUNER ..... to tune to a lower or higher radio frequency.
for TAPE .... to rewind or fast forward a tape on tape deck 2 only.

STOP•CLEAR ■

for CD .... to stop CD playback or to clear a program.
for TUNER ..... to stop programming.
for TAPE .... to stop playback or recording.
DEMO .... *(on the system only)* to start or stop demonstration mode.

PLAY ▶ / PAUSE ❚❚ (SIDE A•B)

for CD .... to start or interrupt playback.
for TAPE .... to start playback.
.... SIDE : when playing in Tape 2 mode, to change side.

PREV ⏮ / NEXT ⏭ (PRESET ▼▲)

for CD .... to skip to the beginning of the current, previous, or next track.
for TUNER ..... to select a preset station in memory.

18 **MIC LEVEL**
- to adjust the mixing level for karaoke or microphone recording.

19 **MIC**
- to connect microphone jack.

20 **VOLUME**
- to adjust the volume.

21 **DYNAMIC BASS BOOST (DBB)**
- to select a bass boost level or to switch off bass boost.

22 **OPEN**
- to open tape deck 2.

23 **TAPE DECK 2**

24 **TAPE DECK 1**

25 **OPEN**
- to open tape deck 1.

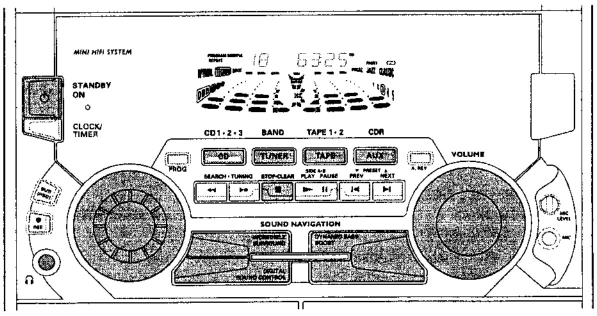
26 **REPEAT**
- to repeat a CD track, a disc, or all the available discs.

27 **SHUFFLE**
- to play all the available discs and their tracks in random order.

28 **SLEEP TIMER**
- to switch the set to standby mode at a selected time period.

29 ⏻
- to switch the system to standby mode.

Notes for remote control:
- ***First select the source you wish to control by pressing one of the source select keys on the remote control (e.g. CD, TUNER, TAPE 1/2 or AUX).***
- ***Then select the desired function (PLAY, NEXT, etc.).***



Important:
Before you operate the system, complete the preparation procedures.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system. ***When the system is switched on for the first time, the demonstration mode will start automatically.***

Notes:
- *During the demonstration, if you press any source (or standby-on) button, the system will switch to the respective mode (or standby).*
- *When the system is switched to standby mode, the demonstration will resume 5 seconds later.*

To stop the demonstration mode
- Press and hold **STOP•CLEAR ■** *(on the system only)* for ***5 seconds*** when the system is in demonstration mode.
  → The demonstration will stop.
  → "DEMO OFF" is displayed.
  → The system will switch to standby mode.

Note:
- *Even though the AC power cord is removed from and reconnected to the wall socket, the demonstration will remain off until it is switched on again.*

To start the demonstration mode
- Press and hold **STOP•CLEAR ■** *(on the system only)* for ***5 seconds*** when the system is in standby mode.
  → The demonstration will begin.

Easy Set

EASY SET allows you to store all available radio stations automatically.

1 Press and hold **STANDBY ON** *(on the system only)* for ***5 seconds***; when the system is in standby or demonstration mode.
  → "EASY SET" will be displayed, and followed by "TUNER" and then "AUTO".
  → EASY SET will start searching for all radio on FM band and then followed by radio stations on MW band.
  → All available radio stations with sufficient signal strength will be stored. Up to 40 presets may be stored.

Notes:
- *EASY SET will start with the FM band, if there are still presets available, the system will continue to store the MW band.*
- *When EASY SET is used, all previously stored radio stations will be replaced.*
- *The last preset radio station will appear on the display when EASY SET is completed.*

Switching the system ON

- Press **STANDBY ON** *(on the system only)*, **CD**, **TUNER**, **TAPE** or **AUX**.

You can also switch on the system by pressing any one of the CD DIRECT PLAY buttons.

Switching the system to standby mode

- Press **STANDBY ON** again or ⏻ on the remote control.
  → The system will switch to standby mode.

Selecting the Source

- Press the respective source selection button: **CD**, **TUNER**, **TAPE** or **AUX**.
  → The display indicates the selected source.

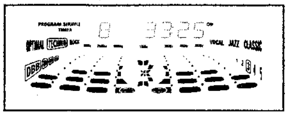
Note:
- *For an external source, make sure you have connected the audio left and right OUT terminals of the external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder) to the AUX IN terminals.*

Selecting the Equalizer Display

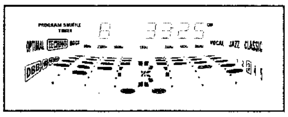
You can select the desired equalizer display for the system. You must not press the DSC button on the system before using the JOG.

- Rotate the **JOG** to select the desired Equalizer Display, NORMAL, TOP DOWN, or NITE MODE.
  → The selected display will be shown.

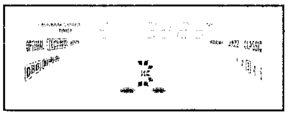
NORMAL Display



TOP DOWN Display



NITE MODE Display



Note:
- *In NITE MODE, all lights will be switched off and the display brightness will be dimmed.*

Sound Control

VOLUME ADJUSTMENT

Adjust **VOLUME** to increase or decrease the sound level.

For Personal Listening
Connect the headphones plug to the 🎧 socket at the front of the system. The speakers will be muted.

INCREDIBLE SURROUND

Normal stereo sound is determined by the distance between the front speakers. When Incredible Surround is switched on, it magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect. There are 12 different Incredible Surround levels available for selection.

- Press **INCREDIBLE SURROUND** to switch on.
  → The INCREDIBLE SURROUND display lights up.
  → "IS XX" will be displayed.

Note:
- *"XX" is the last selected Incredible Surround level.*

You can change the Incredible Surround level with the JOG.

- Rotate the **JOG** to select the desired Incredible Surround level immediately after selecting the Incredible Surround feature.
  → The Incredible Surround level will increase or decrease between level 1 and 12.

To switch off Incredible Surround
- Press **INCREDIBLE SURROUND** again.
  → The INCREDIBLE SURROUND display is switched off.
  → "IS OFF" will be displayed.

DIGITAL SOUND CONTROL (DSC)

The DSC feature enables you to adjust the system to suit your type of music.

- Press **DIGITAL SOUND CONTROL (DSC)** to select OPTIMAL, CLASSIC, TECHNO, JAZZ , ROCK or VOCAL.
  → The selected digital sound is encircled.
  → "OPTIMAL X, CLASSIC, TECHNO X, JAZZ X, ROCK X or VOCAL X" will be displayed. "X" is the pre-selected level.

You can change the digital sound setting level for all but CLASSIC with the JOG.

- First select the DSC feature, then rotate the **JOG** until the desired digital sound setting level is reached.
  → The digital sound setting level will increase or decrease between level 1 and 5.

Note:
- *For neutral setting, select CLASSIC and switch off DBB.*

DYNAMIC BASS BOOST (DBB)

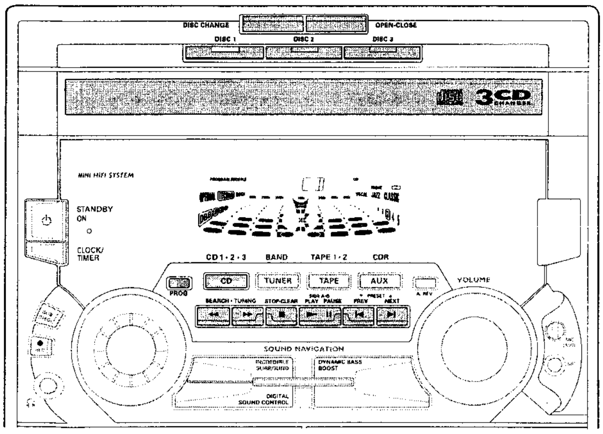
There are three DBB settings to enhance the bass response.

- Press **DBB** briefly to select a bass boost level.
  → The respective DBB level is being encircled and lit.
  → "BEAT, PUNCH or BLAST" will be displayed.

To switch off DBB
- Press **DBB** briefly until "DBB OFF" is displayed.

Note:
- *Some CDs or tapes might be recorded in high modulation. It may cause a distortion at high volume. If this occurs, switch off DBB or reduce the volume.*

Automatic DSC-DBB selection
The best DBB setting is generated automatically for each DSC selection. You can manually select the DBB setting that best suits your listening environment.



Warning!
1) ***This system is designed for conventional CDs. Do not use any accessories such as disc stabilizer rings or CD treatment sheets, etc., which may damage the CD mechanism.***
2) ***Do not load more than one disc into each tray.***
3) ***When the CD changer is loaded with CDs, do not turn over or shake the system. This may jam the changer.***

You may load three discs in the CD changer for continuous playback without interruption.

Disc for playback

This system can playback all audio CD, finalized audio CD-Recorder and finalized audio CD-Rewritable format discs.

Loading the CD Changer

1. Press **CD** to select CD mode.
2. Press **OPEN•CLOSE**.
   → The CD carousel slides out.
3. Load a CD with the printed side up in the right tray.
   - You can load another disc in the left tray.
   - To load the third disc, press the **DISC CHANGE** button.
     → The CD carousel will rotate until the empty tray is ready for loading.
4. Press **OPEN•CLOSE** to close the CD carousel.
   → The total number of tracks and the playing time of the last selected disc appear on the display.

Note:
- *To ensure good system performance, wait until the CD changer completely reads the disc(s) before proceeding.*

CD Direct Play

You can play a CD directly by pressing the **DISC 1**, **DISC 2** or **DISC 3** button. The CD player will stop at the end of playback of the selected disc.

- A lit button indicates that a disc is loaded in the disc tray.

Playing a CD

1. Press **PLAY ▶** to start playback.
   → The disc tray, track number and elapsed playing time of the current track appear on the display.
   - To interrupt playback, press **PAUSE II**.
     → The playing time flashes.
   - To resume playback, press **PLAY ▶** again.
2. To stop playback, press **STOP•CLEAR ■**.

Note:
- *All the available discs will play once, then stop.*

Disc Change

You can change the outer two discs while the third inner disc is stopped or is playing.

1. Press **DISC CHANGE**.
   → The CD carousel slides out.
2. Replace the discs in the left and right disc trays.
   - If you press **DISC CHANGE** again during playback, the CD will stop playing.
     → The CD carousel will rotate until the inner tray is rotated out and is ready for loading.
3. Press **OPEN•CLOSE** to close the CD compartment.

Selecting a desired track

Selecting a desired track when playback is stopped

1 Press **PREV ⏮** or **NEXT ⏭** until the desired track appears on the display.
2 Press **PLAY ▶** to start playback.
   → The selected track number and elapsed playing time appear on the display.

Selecting a desired track during playback

- Press **PREV ⏮** or **NEXT ⏭** until the desired track appears on the display.
  → The selected track number and elapsed playing time appear on the display.
- If you press **PREV ⏮** once it will skip to the beginning of the current track and play the track again.

Searching for a particular passage during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  → The volume will be reduced.
- Play returns to normal when ◀◀ or ▶▶ is released.

Programming Tracks

Programming tracks of a loaded CD is possible when playback is stopped. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show "FULL".

1 Load the desired discs in the disc trays.
2 Press **PROGRAM** to start programming.
   → The PROGRAM flag starts flashing.
3 Press the **CD** (CD 1•2•3) button to select the disc.
4 Press **PREV ⏮** or **NEXT ⏭** to select the desired track.
5 Press **PROGRAM** to store the track.
- Repeat steps *3* to *5* to store other discs and tracks.

6 Press **STOP•CLEAR ■** once to end programming.
   → The total number of tracks programmed and total playing time appear on the display.

Notes:
- *If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "- - : - -" appears on the display instead of the total playing time.*
- *During programming, if no button is pressed within 20 seconds, the system will exit program mode automatically.*

Reviewing the program

Reviewing of the program is possible only when playback is stopped.

- Press **PREV ⏮** or **NEXT ⏭** repeatedly to review the programmed tracks.
- Press **STOP•CLEAR ■** to exit review mode.

Playing the program

1 Press **PLAY ▶** to start program playback.
   → "PLAY PROGRAM" appears on the display.
   → The track number and elapsed playing time of the current track will appear on the display.
- If you press **REPEAT** during program playback, the current track will be played repeatedly.
  → The REPEAT and PROGRAM flags will be displayed.

2 Press **STOP•CLEAR ■** to stop program playback.

Notes:
- *If you press any of the CD DIRECT PLAY buttons, the system will play the selected disc or track and the stored program will be ignored temporarily. The PROGRAM flag also will disappear temporarily from the display. It will reappear when playback of the selected disc ends.*
- *REPEAT DISC mode will be cancelled when program playback begins.*

Erasing the program *(when playback is stopped)*

- Press **STOP•CLEAR ■**.
  → "PROGRAM CLEARED" will be displayed.

Note:
- *The program will be erased when the system is disconnected from the power supply or when the CD carousel is opened. If the CD carousel is opened, the tracks belonging to the outer two trays will be erased and the display will show "TRACKS CLEARED".*

Shuffle *(only on remote control)*

In shuffle mode, the system plays all the available discs and their tracks in random order. Shuffle may be used also when tracks are programmed.

To shuffle all the discs and tracks

1 Press **SHUFFLE**.
   → "SHUFFLE" will be displayed.
   → The SHUFFLE flag, the disc and the track selected at random appear on the display.
- The discs and the tracks will be played in random order until you press **STOP•CLEAR ■**.
- If you press **REPEAT** during shuffling, the current track or all available discs will be played repeatedly.
  → The REPEAT and SHUFFLE flags will be displayed.

2 Press **SHUFFLE** again to resume normal playback.
   → The SHUFFLE flag disappears from the display.

Note:
- *REPEAT DISC mode will be cancelled when shuffle begins.*

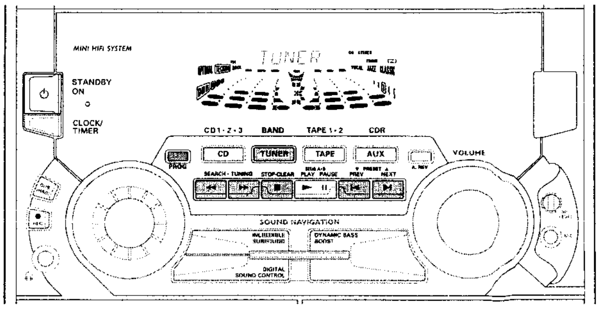
Repeat *(only on remote control)*

You can play the current track, a disc or all available discs repeatedly.

1 Press **REPEAT** on the remote control during CD playback to select the various repeat modes.
   → "TRACK", "DISC", "ALL" or "OFF" will be displayed.
   → The REPEAT flag appears on the display.
- The selected track, selected disc or all available discs will now be played repeatedly until you press **STOP•CLEAR ■**.

2 Press **REPEAT** until the "OFF" mode is displayed to resume normal playback.
   → The REPEAT flag disappears from the display

Note:
- *REPEAT DISC mode is not available during program play or shuffling mode.*



Note:
- *For 'EASY SET' feature, please refer to page 11.*

Tuning to radio stations

1 Press **TUNER** (BAND) to select TUNER mode.
   → "TUNER" will be displayed.
   A few seconds later, the current radio frequency will be displayed.
2 Press **TUNER** (BAND) again to select the desired waveband : FM or MW.
3 Press **TUNING ◀◀** or **▶▶** for more than one second, then release.
   → The display will show "SEARCH" until a radio station with sufficient signal strength is found.
- Repeat this procedure until the desired station is reached.
- To tune to a weak radio station, briefly press **TUNING ◀◀** or **▶▶** repeatedly until the display shows the desired frequency and/or when the best reception has been obtained.

Storing Preset Stations

You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

Automatic programming

1 Press **TUNER** (BAND).
2 Press **PROGRAM** for more than one second.
   → The PROGRAM flag starts flashing and "AUTO" will be displayed.

- → The system will search for every available station in the FM waveband first, then search the MW wavebands.
- → All available radio stations will be stored automatically. The frequency and preset number will be displayed briefly.
- → The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
- → The system will remain tuned to the last stored preset radio station.

Notes:

- *You can cancel the automatic programming by pressing PROGRAM or STOP•CLEAR ■ (on the system only).*
- *If you want to reserve a section of preset numbers, for example preset numbers 1 to 9, select preset 10 before starting automatic programming: only the preset numbers 10 to 40 will be programmed.*

Manual programming

1. Press **TUNER** (BAND).
2. Press **TUNER** (BAND) again to select the desired waveband : FM or MW.
3. Press **PROGRAM** for less than one second.
   - → The **PROGRAM** flag starts flashing.
   - → The next available preset number will be displayed for selection.
4. Press **TUNING** ◀◀ or ▶▶ to tune to the desired frequency.
   - If you wish to store the radio station to another preset number, press **PRESET** ▼ or ▲ to select the desired preset number.
5. Press **PROGRAM** again.
   - → The **PROGRAM** flag disappears and the radio station will be stored.

- Repeat the ***steps 3 to 5*** to store other preset radio stations.

Notes:

- *When 40 radio stations are stored and you attempt to store another radio station, the display will show "FULL". If you want to change an existing preset number, repeat steps 3 – 5.*
- *You can cancel manual programming by pressing STOP•CLEAR ■ (on the system only).*
- *During programming, if no button is pressed within 20 seconds, the system will exit program mode automatically.*

Tuning to Preset Radio Stations

- Press **PRESET** ▼ or ▲ to select the desired preset number.
  - → The preset number, radio frequency, and waveband appear on the display.

Changing the MW tuning grid

(not available for version /30)

The frequency step can be changed if necessary. In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz. In other parts of the world, it is 9 kHz. The frequency step presetted in the factory is 9 kHz.

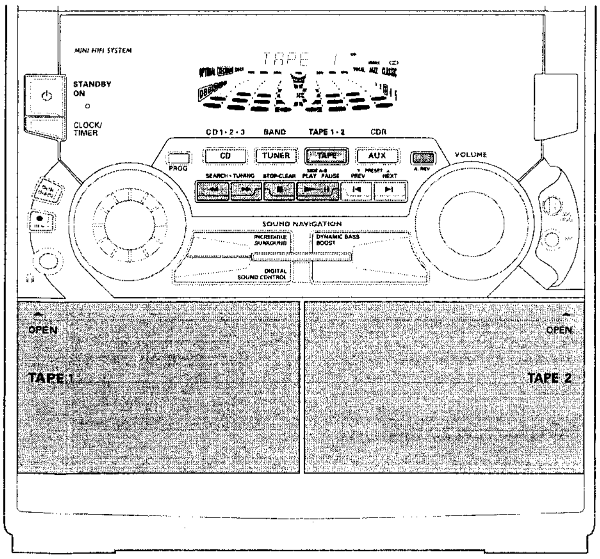
For MW band
To change from 9 kHz to 10 kHz or vice versa

Changing of tuning grid will erase all previously stored preset stations.

1. Disconnect the system from the AC power supply *(pull out the AC power cord)*.
2. Press **TUNER** and **TUNING** ▶▶ depressed while reconnecting the system to the AC power supply.
   - → Display will show "TUNER" and follow by "GRID 9" or "GRID 10".

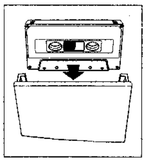
Notes:

- *GRID 9 indicates that the tuning grid is in step of 9 kHz in MW band. GRID 10 indicates that the tuning grid is in step of 10 kHz in MW band.*
- *FM tuning grid will also be changed from 50 kHz to 100 kHz or vice versa. All preset radio stations will also be erased.*



Loading a tape

- Press **OPEN**.
- The tape deck door opens.
- Load the tape with the open side downward and the full spool to the left.
- Close the tape deck door.



Tape Playback

1. Press **TAPE** (TAPE 1•2) to select TAPE mode.
   - → "TAPE 1" or "TAPE 2" will be displayed.
   - Press **TAPE** (TAPE 1•2) again to select either tape deck 1 or tape deck 2.
2. Load the tape into the desired tape deck.
3. Press ▶ to start playback.

3a *(For Tape Deck 2 only)*
Press ▶ (SIDE A•B) again to switch playback between side A and B.
→ The **BACK** or **FRONT** flag appears on the display, depending on the side selected.

3b *(For Tape Deck 2 only)*
Press **A. REV** to select the different type of playback mode *(see auto reverse playback)*.

4. Press ■ to end playback.

Notes:

- *To change side before playback begins, use the SIDE button on the remote control.*

Auto Reverse Playback *(only on tape deck 2)*

- Press **A. REV** to select the different playback modes.

⇉ .... to record or playback on one side of the tape. The tape stops at the end of one side.

⊐ ...... to record or playback on both sides of the tape. The tape then stops.

⊂⊃ .... to playback continuously on both sides of the tape up to a maximum of 10 times per side unless you press ■ .

Rewind/Fast Forward *(only on tape deck 2)*

When playback is stopped

1. You can rewind or fast forward the tape by pressing ◀◀ or ▶▶ respectively.
   - → "<<<" or ">>>" will be displayed depending on which button is pressed.
   - → The tape will stop automatically at the end of the rewinding or fast forwarding.
2. Press ■ to stop rewinding or fast forwarding.

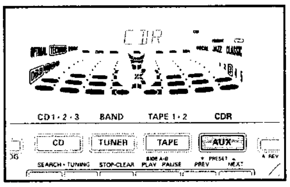
TAPE

During playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  → During searching, the sound is reduced to a low volume.
  → When you release ◀◀ or ▶▶, the tape continues playing.

Notes:
- *During rewinding or fast forwarding of a tape, it is also possible to select another source (e.g. CD, TUNER, or AUX).*
- *Before use, check and tighten slack tape with a pencil. Slack tape may get jammed or may burst in the mechanism.*
- *C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.*
- *Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV, or speaker).*

AUX



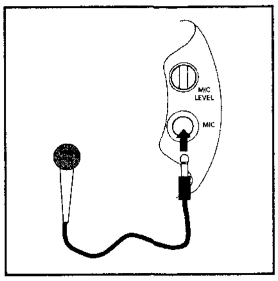
Selecting External Equipment

If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc player, DVD player, or CD Recorder) to the AUX IN terminals, you can hear the enhanced sound from the system.

- Press **AUX** to select the external mode.
  → "AUX" will be displayed.
- Press **AUX** again to select AUX-CDR mode.
  → "CDR" will be displayed.

Notes:
- *There are two AUX modes:*
  i. the normal AUX mode.
  ii. the CDR mode; where the LINE OUT of this mini system is muted. You will not be able to record or listen to the sound from the LINE OUT.
- *You are advised not to listen to and record from the same source simultaneously.*
- *All the sound control features (e.g. DSC, DBB, etc.) are available for selection.*

KARAOKE

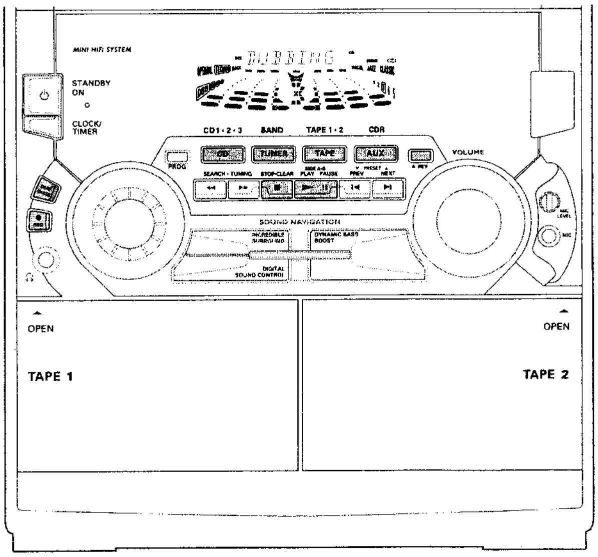


Microphone Mixing

1 Set the **MIC LEVEL** control to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.
2 Connect a microphone to the **MIC** socket.
3 Press **CD**, **TUNER**, **TAPE** or **AUX**.
4 Play the selected source.
5 Adjust the volume level with **VOLUME** control.
6 Adjust the **MIC LEVEL** control to the mixing level that you want.
7 Start singing or talking through the microphone.

Note:
- *Keep the mic away from the speakers to prevent howling.*

RECORDING



Notes:
- *If you do not intend to record via the microphone, unplug the microphone to avoid accidental mixing with other recording source.*
- *For recording, use only tape of IEC type I (normal tape) or IEC type II (CrO_2).*
- *The tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for 6 to 7 seconds.*
- *The recording level is set automatically, regardless of the position of Volume, DBB, Incredible Surround or DSC.*
- *To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.*
- *If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the CrO_2 tape detection hole when covering the tab opening.*

CD Synchro Start Recording

1 Load a blank tape into tape deck 2 and a disc into a disc tray.
2 Press **CD** to select CD mode.
- You can program the tracks in the order you want them to be recorded (see Programming Tracks). If you do not, the tracks are recorded according to the order on the selected disc.

3 Press **REC** to start recording.
  → The **REC** flag starts flashing.
- CD will start playback automatically.

4 Press ■ to stop recording.

Recording from other sources

(only on tape deck 2)

1 Press **TAPE** (TAPE 1•2) to select tape deck 2.
2 Load a blank tape into tape deck 2 with the open side downward.
3 Press **SIDE** on remote control to select the recording side.
  → The **BACK** or **FRONT** flag will be displayed, depending on the side selected.
4 Press **A. REV** to select the playback mode (⊐ or ⊃).
5 Press **CD**, **TUNER** or **AUX**.
- Start playback of the selected source.

6 Press **REC** to start recording.
  → The **REC** flag starts flashing.
7 Press ■ to stop recording.

Notes:
- *Only ⇄ or ⊐⊃ mode is available during recording.*
- *During recording, it is not possible to listen to another source.*

Dubbing tapes *(from tape deck 1 to tape deck 2)*

1 Press **TAPE** (TAPE 1•2) to select tape deck 2.
2 Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2.
   → Make sure the tape in tape deck 1 has its full spool to the left.
3 *(For Tape Deck 2 only)*
   Press **SIDE** on the remote control to select the recording side.
4 Press **DUB (HSD)** ***once*** for normal speed dubbing or ***twice*** *(within 2 seconds)* for high speed dubbing.
   → "NORMAL" (normal speed) or "FAST" (high speed) will be displayed, followed by "DUBBING".
   → The HSD flag appears on the display during high speed dubbing.
- Dubbing will start immediately
   → The REC flag starts flashing.

5 Press ■ to stop dubbing.

Notes:
- *At the end of side A, flip the tapes to side B and repeat the procedure.*
- *Dubbing of tapes is only possible from tape deck 1 to tape deck 2.*
- *To ensure good dubbing, use tapes of the same length.*
- *During high speed dubbing in Tape mode, the sound is reduced to a low volume.*
- *You can listen to another source while dubbing.*

Recording the mixed sound / One Touch Recording

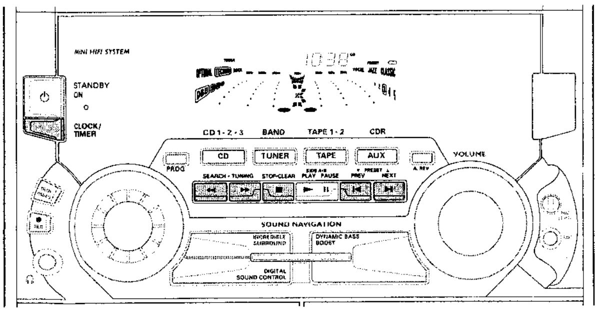
- During microphone mixing, you can record the mixed sound on a tape in tape deck 2 except dubbing mode.
- For One Touch Recording, as soon as you press **REC**, the current source (CD, TUNER or AUX) will be recorded on tape deck 2

1 Load a blank tape in tape deck 2.
2 Press **REC** to start recording.
   → The REC flag starts flashing.
3 Press ■ to stop recording.

Note:
- *When you press RECORD while in TAPE mode, "SELECT SOURCE" will be displayed. One Touch Recording is not possible in TAPE mode.*

Digital Recording via Digital Out

For CD digital recording, please refer to the Instructions Manual of the CD Recorder, digital audio equipment, etc.



Viewing the Clock

You can view the clock (if it is set) while the system is in standby mode or any source mode. It will be displayed for about 7 seconds.

- Press **CLOCK/TIMER** briefly *(on the system only)*.
   → " 10:38" (the current time) will be displayed.
   → " -- : -- " will be displayed if the clock is not set.

Setting the Clock

The clock is set in 24-hour mode, e.g. "00:00" or "23:59". Before setting the clock, you must be in the View Clock mode.

1 Press **CLOCK/TIMER** to select clock mode.
   → "00:00" or the current time starts flashing.
2 Set the hour with ◀◀ or ▶▶.
3 Set the minute with ◀◀| or ▶▶|.
4 Press **CLOCK/TIMER** again to store the setting.
   → The clock starts.

- To exit without storing the setting, press ■ on the system.

Notes:
- *During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.*
- *When a power interruption occurs, the clock setting is erased.*

Setting the Timer

- The system can switch on to CD, TUNER, or TAPE 2 mode automatically at a preset time. It can serve as an alarm to wake you up.
- Before setting the timer, make sure the clock is set correctly.
- The timer will always be switched on once it is set.
- **The volume of the timer will start to increase from the minimum level until the volume level before the set is switched to standby mode.**

1 Press and hold **CLOCK/TIMER** for more than 2 seconds to select timer mode.
   → "00:00" or the last set timer starts flashing. The TIMER flag flashes.
   → The last selected source is lit while other available sources are flashing.
2 Press **CD**, **TUNER** or **TAPE** to select the desired source.
- Before selecting CD or TAPE, make sure a CD or tape is loaded in the CD tray or tape deck 2.

3 Press ◀◀ or ▶▶ to set the hour for the timer to start.
4 Press ◀◀| or ▶▶| to set the minute for the timer to start.
5 Press **CLOCK/TIMER** to store the start time.
   → The timer is now set.
   → The TIMER flag remains on the display.

- To exit without storing the setting, press ■ on the system.
- At the preset time, the timer will be activated.
   → The selected source will be played.

Notes:
- *During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.*
- *If the source selected is TUNER, the last tuned frequency will be switched on.*
- *If the source selected is CD, playback will begin with the first track of the last selected disc. If the CD trays are empty, the TUNER will be selected instead.*
- *If the source selected is TAPE, and if the preset time is reached during high speed dubbing, the TUNER will be selected instead.*

TIMER

To switch off the TIMER

1 Press **CLOCK/TIMER** for more than 2 seconds.
2 Press ■ on the system to cancel the timer.
   → The timer is now switched off.
   → The display will show "OFF" and the **TIMER** flag disappears.

To start the TIMER again *(for the same preset time and source)*

1 Press **CLOCK/TIMER** for more than 2 seconds.
2 Press **CLOCK/TIMER** again to store the start time.
   → The timer is now switched on.
   → The **TIMER** flag appears on the display.

SLEEP TIMER

Sleep Timer *(only on remote control)*

This feature allows you to select a length of time after which the system will switch to the standby mode automatically.

- Press **SLEEP TIMER** on the remote control repeatedly to select a period of time.
  → The selections are as follows (time in minutes):
  60 → 45 → 30 → 15 → OFF → 60 ...
  → "SLEEP XX" or "OFF" will be displayed. "XX" is the time in minutes.
- When you reach the desired length of time, stop pressing the **SLEEP TIMER** button.
  → After this amount of time passes, the system will switch to the standby mode.

To switch off the sleep timer

- Press **SLEEP TIMER** repeatedly until "OFF" is displayed, or press the **STANDBY ON** button.

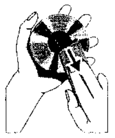
MAINTENANCE

Maintenance

Cleaning the Cabinet

- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs



- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

Cleaning the CD lens

- After prolonged use, dirt or dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with cleaner.

Cleaning the Heads and the Tape Paths

- To ensure good recording and playback quality, clean the heads, the capstan(s), and pressure roller(s) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You can also clean the heads by playing a cleaning tape once.

Demagnetizing the heads

- Use a demagnetizing tape available at your dealer.

TROUBLESHOOTING

Warning! Under no circumstances you should try to repair the set yourself as this will invalidate the guarantee. Do not open the set as there is a risk of electric shock.

- If a fault occurs, check the points listed below before taking the system for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.

- The disc is inserted upside down.
→ *Place CD with printed side up.*
- Moisture condensation at the lens.
→ *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.
→ *Insert a CD.*
- The CD is dirty, badly scratched or warped.
→ *Clean or replace the CD.*
- The CD lens is dirty or dusty.
→ *See section under Maintenance.*

"DISC NOT FINALISED" is displayed.

- The CD-RW or CD-R disc is not properly recorder for the use of a standard CD player.
→ *Read the instruction booklet of your CD-Rewritable or CD-Recorder on how to finalize a recording.*
- The CD is badly scratched or dirty.
→ *Replace or clean CD.*

Radio Reception

Poor radio reception.

- The signal is too weak.
→ *Adjust the antenna.*
→ *Connect an external antenna for better reception.*
- The TV or VCR is too close to the stereo system.
→ *Separate the stereo system from the TV or VCR.*

Cannot tune to station.

- Wrong tuning grid.
→ *Switch to the correct tuning grid.*

Tape Deck Operation

Recording or playback cannot be made or there is a decrease in audio level.

- Dirty tape heads, capstans or pressure rollers.
→ *See section on tape deck maintenance.*
- Magnetic build-up in the record/playback head.
→ *Use demagnetizing tape.*

General

System does not react when any button is pressed.

- Electrostatic discharge.
→ *Press STANDBY-ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect the power plug and switch on the system again.*

No or poor sound.

- Volume is not turned up.
→ *Adjust VOLUME.*
- The headphones are connected.
→ *Disconnect the headphones.*
- Speakers are not connected or are connected wrongly.
→ *Check that the speakers are connected correctly.*
→ *Make sure the stripped speaker wire is clamped.*

Reversed left and right sound.

- Speakers are connected wrongly.
→ *Check the speaker connections and location.*

Lack of bass sound or apparently imprecise physical location of musical instruments.

- Speakers are connected wrongly.
→ *Check the speaker connection for proper phasing, red/black wires to red/black terminals.*

Remote control has no effect on the system.

- Wrong source is selected.
→ *Select the source (CD, TUNER, etc.) before pressing the function button, (PLAY, PREV/NEXT, etc.).*
- The distance to the system is too large.
→ *Reduce the distance.*
- Batteries are inserted incorrectly.
→ *Insert the batteries with their polarities (+/– signs) as indicated.*
- Batteries are exhausted.
→ *Replace the batteries.*

Timer not working.

- Clock is not set.
→ *Set the clock.*
- Timer is not switched on.
→ *Press CLOCK/TIMER to switch on the timer.*
- Dubbing/recording is in progress.
→ *Stop dubbing/recording.*

Clock setting is erased.

- There was a power failure.
→ *Reset the clock.*

System displays features automatically; buttons flash continuously.

- Demonstration mode is switched on.
→ *Press and hold ■ (on the system only) for 5 seconds to switch off the demonstration.*

A howling sound at external source.

- You hear feedback when you are listening and recording from the same source simultaneously.
→ *Press AUX to select CDR mode.*

ADDITIONAL FEATURES (For /22 only)

Easy Set

EASY SET allows you to store all available radio stations and RDS stations automatically.

1 Press and hold **STANDBY ON** *(on the system only)* for ***5 seconds***; when the system is in standby or demonstration mode.
   → "EASY SET" will be displayed, and followed by "TUNER" and then "AUTO".
   → EASY SET will start searching for all radio stations with RDS and then followed by radio stations on FM, MW and LW band respectively.
   → All available RDS and radio stations with sufficient signal strength will be stored. Up to 40 presets may be stored.
2 The system will search once again for the first available RDS station in order to set the RDS time automatically.

- If no RDS station is available, the program will exit automatically.
  → After a radio station is found, "EASY SET" will be displayed and followed by "TIME"
- When searching RDS time;
  → "SEARCH RDS TIME" will be displayed.
  → When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.

Notes:
- *EASY SET will start with the RDS station, if there are still presets available, it will continue to store the FM, MW and LW bands respectively.*
- *When EASY SET is used, all previously stored radio stations will be replaced.*
- *The last preset radio station or the first available RDS station will appear on the display when EASY SET is completed.*
- *If RDS station does not transmit RDS time within 90 seconds, the program will exit automatically and the display will show "NO RDS TIME".*

Receiving RDS Radio Station

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

- **STATION NAME:** The radio station name is displayed.
- **FREQUENCY:** The frequency of the radio station is displayed.
- **PROGRAM TYPE:** The following program types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, M.O.R. (middle of the road music), Light M, Classics, Other M, No type.
- **RADIO TEXT (RT):** text messages appear in the display.

When you have tuned to a RDS station, the RDS logo (and the radio station name will appear on the display:

- The display normally shows the radio station name if available.
  By repeatedly pressing **RDS** button you can change the type of display information:
  → The display shows in turn: STATION NAME → PROGRAM TYPE → RADIO TEXT → FREQUENCY → STATION NAME ...

Note:
- *When you press the RDS button and the display shows "NO RDS", it indicates that either the tuned station is not transmitting RDS signal or it is a non RDS station.*

RDS Clock

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the time with RDS clock

1 Press **CLOCK/TIMER**.
   → "- - : - -" or current time appears on the display.
2 Press **CLOCK/TIMER** once more to enter clock setting mode.
   → "00:00" or current time starts flashing.
3 Press **RDS**.
   → The message "SEARCH RDS TIME" will be displayed.
   → If the station does not transmit RDS clock, "NO RDS TIME" will be displayed.
   → When the RDS clock is read, "RDS TIME" will be displayed. The current clock time is displayed for 2 seconds and will be stored automatically.
   → If within 90 seconds, the RDS time is not detected, "NO RDS TIME" will be displayed.

ADDITIONAL FEATURES (For /22 only)

News/TA (Traffic Announcement) *(only available in Radio Station with RDS)*

You can activate NEWS or TA function in Standby, Demonstration or any source mode except Tuner mode. Once the News Program Type (for NEWS function) or Traffic Announcement data (for TA function) is detected in any of the selected RDS stations, it will switch to TUNER mode automatically.

NEWS/TA key toggles in the following sequence:

NEWS → TA → OFF → NEWS

To start NEWS or TA function

1 Press **NEWS/TA** to select NEWS function.
   → The NEWS flag and "NEWS" will be displayed.

- If you want to select TA function, press **NEWS/TA** again.
  → The TA flag and "TA" will be displayed.

2 When NEWS or TA is selected;

- It will search for the first 5 available preset RDS stations and wait for the News Program Type / Traffic Announcement data to be available in any of these RDS stations. During the search:
  → The current source activity will remain uninterrupted.
  → If no RDS station is found in the first 5 presets after the search, the NEWS/TA function will be switched off. The display will show "NO RDS NEWS" or "NO RDS TA" and NEWS or TA flag will disappear from the display.
- When NEWS/TA transmission is detected, the system will switch to Tuner mode.
  → The NEWS or TA flag starts flashing.

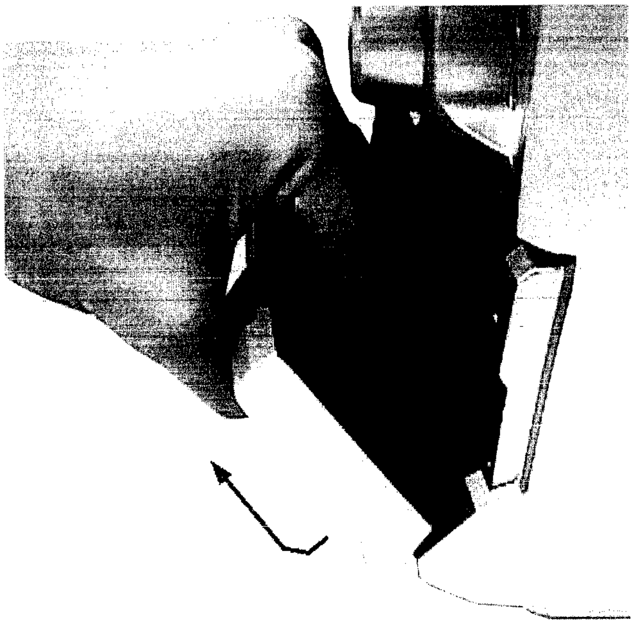
To cancel NEWS or TA function

- Press **NEWS/TA** until the NEWS or TA flag disappears and "TA OFF" is displayed.
  → The last selected source mode will resume.

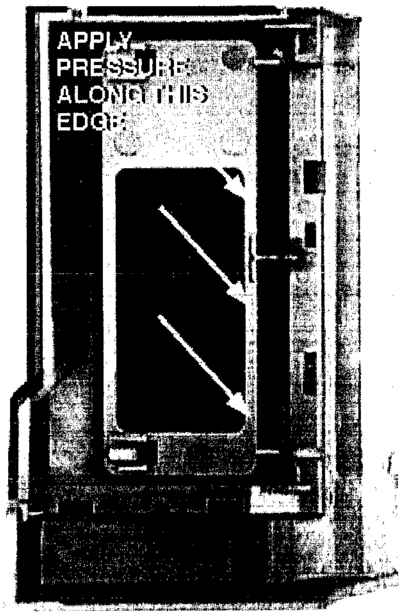
Notes:
- *If you are listening to a non RDS TUNER radio station and should you decide to hear NEWS or TA, first select other source (e.g. CD, TAPE or AUX), then press NEW/TA.*
- *Before using the NEWS or TA feature, ensure that the first 5 presets are RDS stations.*
- *The NEWS/TA works only once for each activation.*
- *During News bulletin or Traffic Announcement, you can press any available source or Tuner function keys to cancel NEWS/TA function and execute the relevant source mode.*
- *If set is switched to Tuner source, the NEWS/TA function will be cancelled, "NEWS OFF" or "TA OFF" will be displayed immediately after the "TUNER" message.*

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover



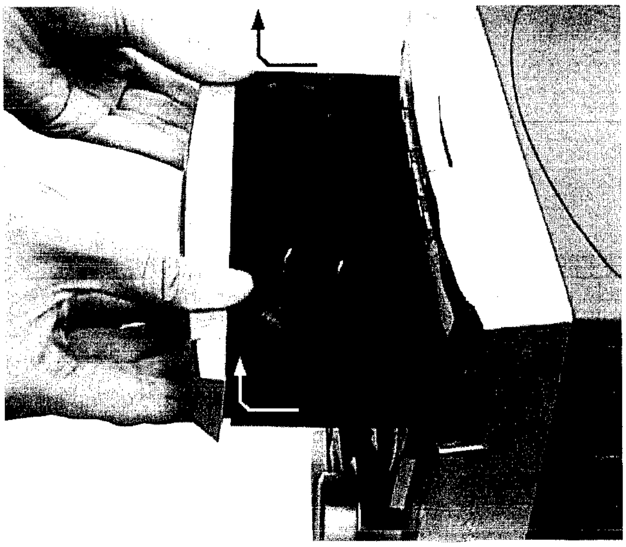
Remove Cassette Door



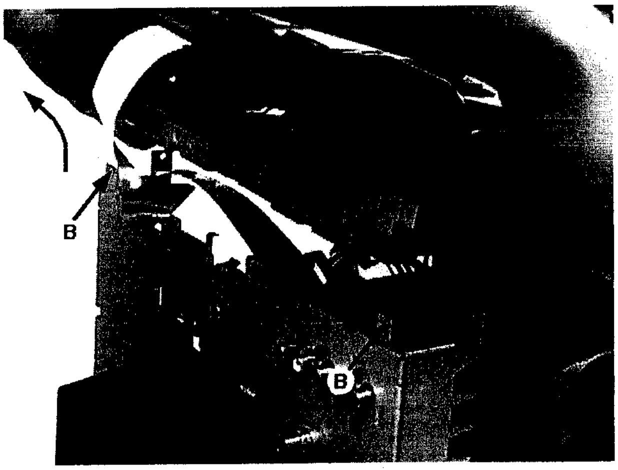
Cassette Door

Dismantling of the CDC Module and Front Panel

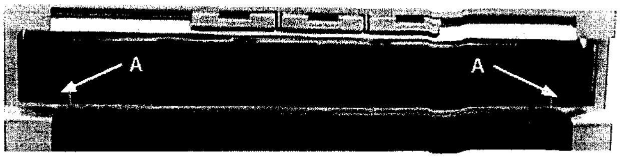
1) Loosen the 17 screws to remove the Cabinet Rear (pos 259) of the set :-
   - 5 screws each on the left side & right side of the Cabinet Rear.
   - 7 screws at the rear of the Cabinet Rear.
2) Slide out the CDC tray and remove the Cover CDC (pos 107) as indicated.
3) Loosen 2 screws A and 2 screws B to remove the CDC Module (pos 1104) as indicated.
4) Remove 1 screw (pos 305) at the bottom to separate the Front Panel Assembly from the Plate Bottom (pos 236).



Remove Cover CDC



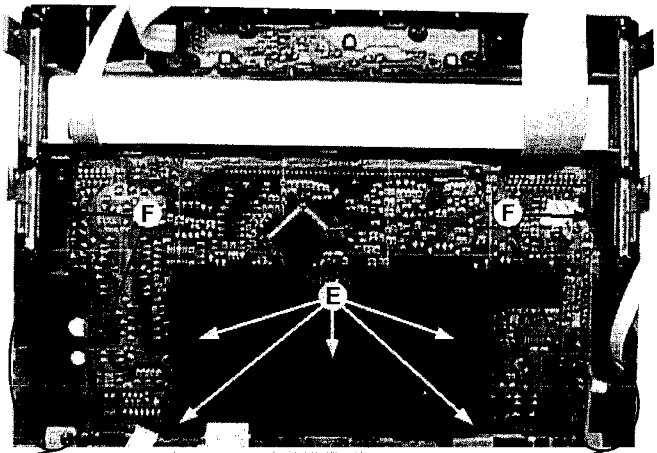
Remove CDC Module

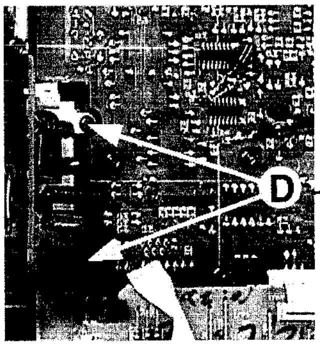


Front CDC

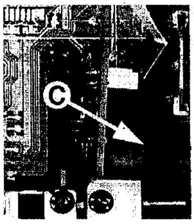
Dismantling of the Front Board

1) Remove 1 screw C as indicated to loosen the Headphone Board (pos 1101-A).
2) Remove 2 screws D as indicated to loosen the Karaoke Board (pos 1102-C) for set with karaoke.
3) Remove 5 screws E as indicated to loosen the Plate Front (pos 254).
4) Remove 4 screws F as indicated to loosen the Front Board (pos 1102-A).





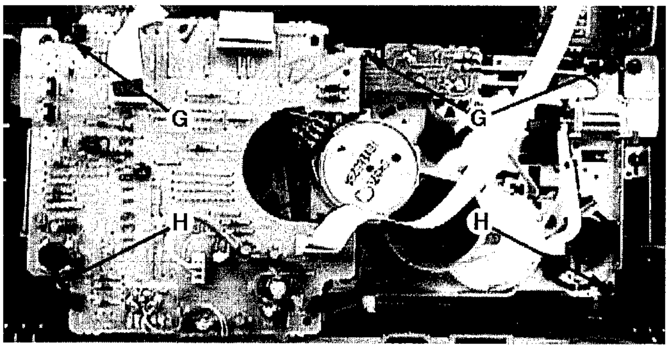
Remove Karaoke Board



Remove Headphone Board

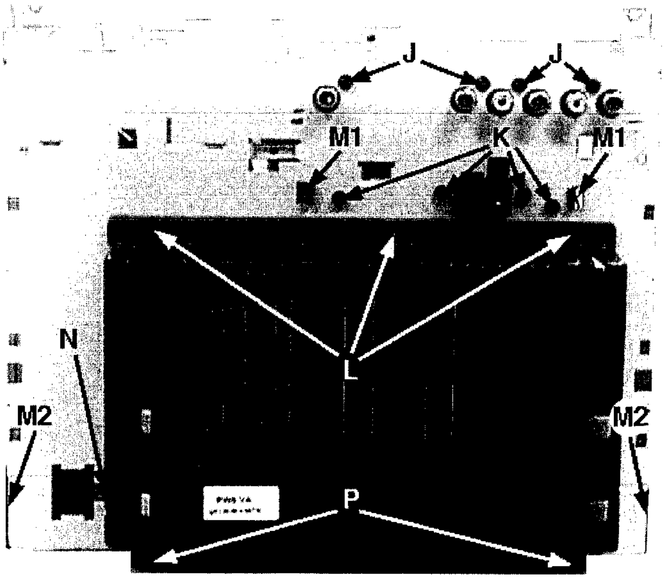
Dismantling of the ETF Module

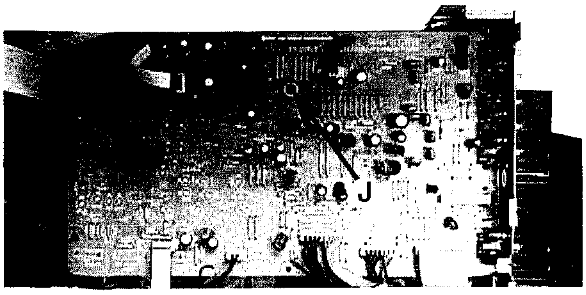
1) Remove 6 screws (3 screws G and 3 screws H) as indicated to loosen the ETF6 Module (pos 1105).



Dismantling of Rear Portion

1) Remove 5 screws J as indicated to loosen the AF Board (pos 1101-B).
2) Remove 4 screws K and uncatch M1 as indicated to loosen the Tuner Board (pos 1100).
3) Remove 3 screws L and 1 screw N (if obstructed) and uncatch M2 as indicated to take out the Plate Rear(pos 234).
4) Remove 2 screws P as indicated to free the Power Module (pos 1103) from the Bottom Plate assembly.





Top View

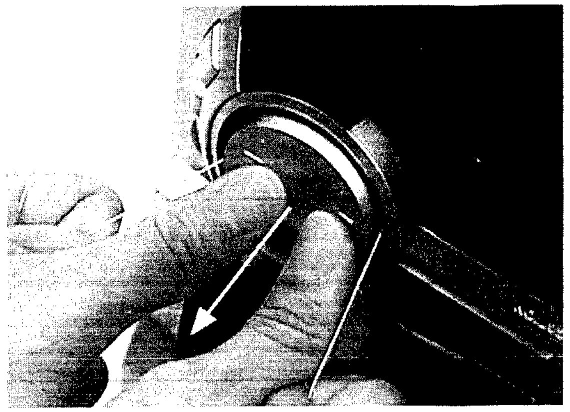
Repair Hints

1) The Jog Rotary (pos 142) can be remove by inserting a strong string into the slot and pull it out in the direction as indicated. See picture 1.

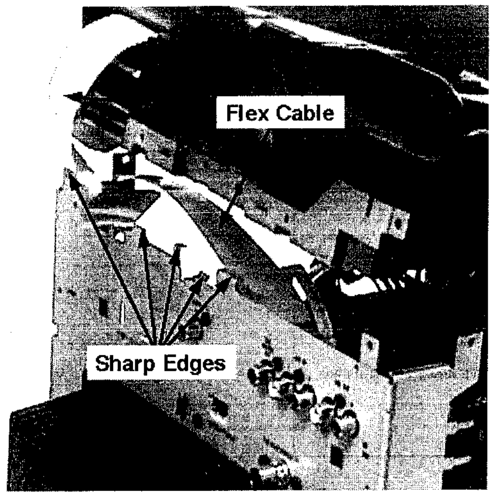
3) During re-assembly of the set, care should be taken to dress all the flex cable wires properly to prevent any damaged cause by any sharp metal edges or any other metal parts. See picture 2.

4) Due to the short flex cable wires in the ETF Module, the pc board should be disconnected and reconnected on the reverse side of the tape mechanism to keep it electrically connected during repair. See picture 3.

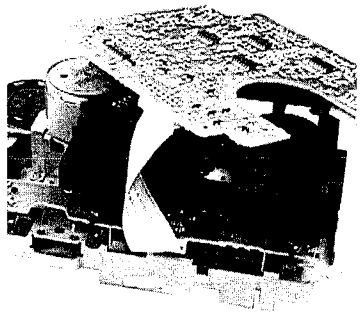
5) During repair it is possible to disconnect the Tuner board and CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.



Picture 1

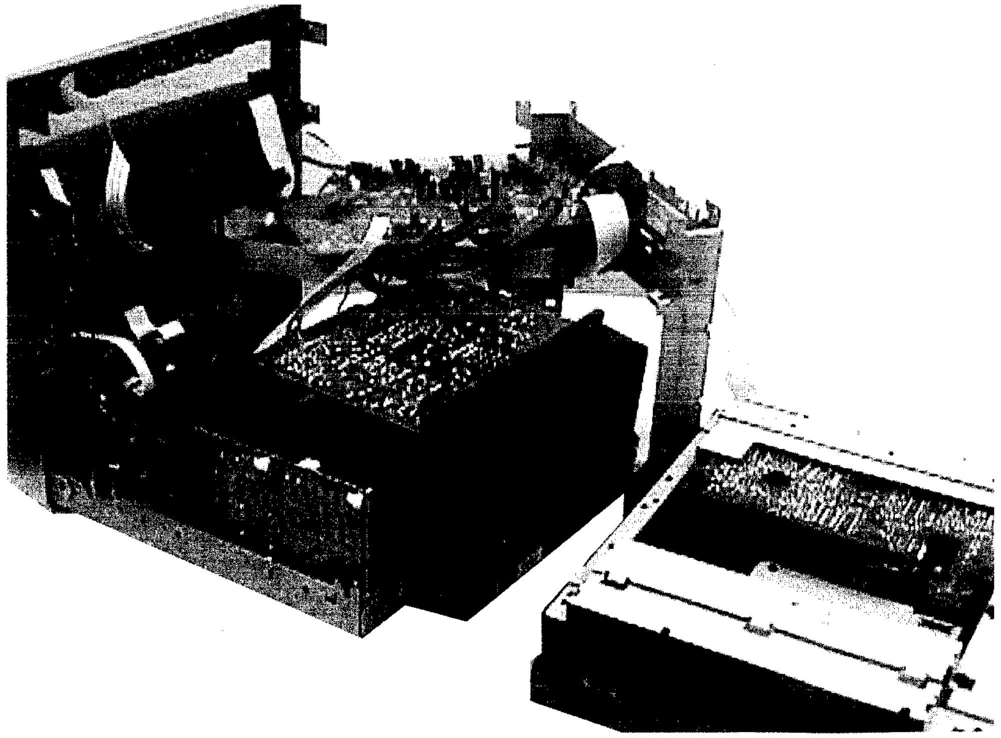


Picture 2

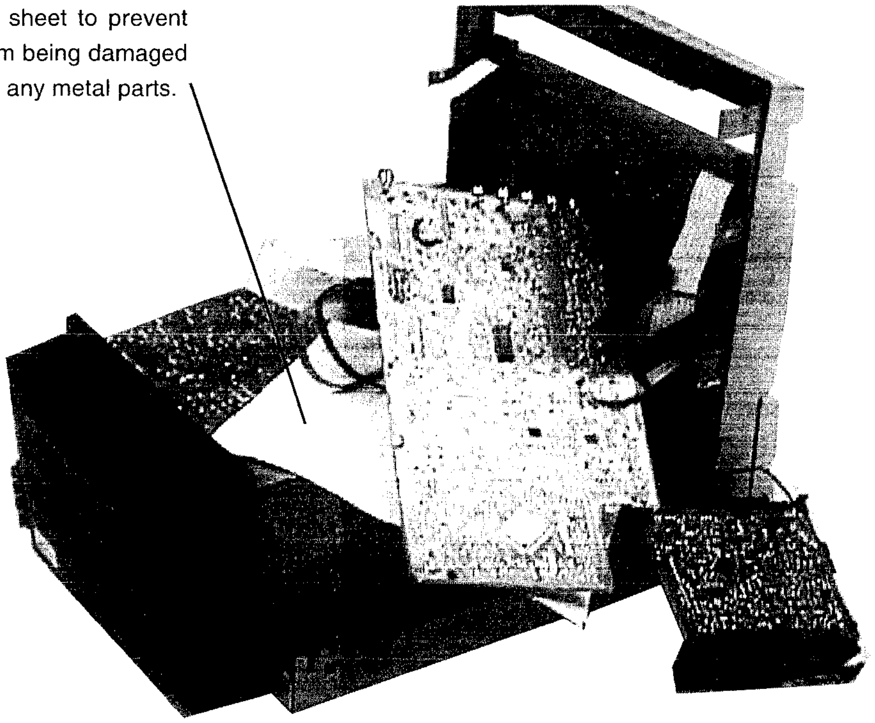


Picture 3

Service pos A

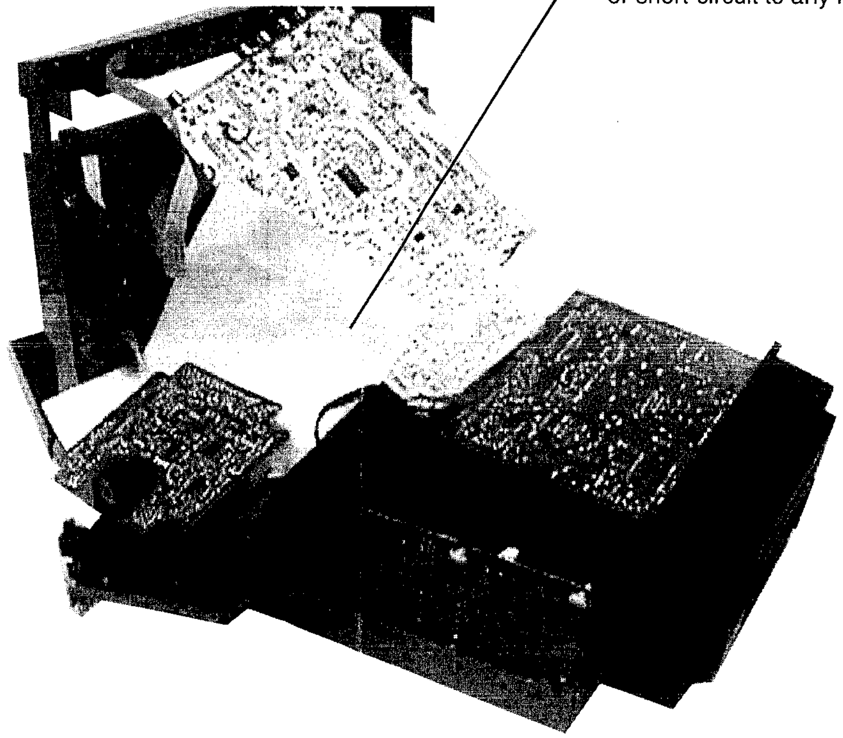


Service pos B



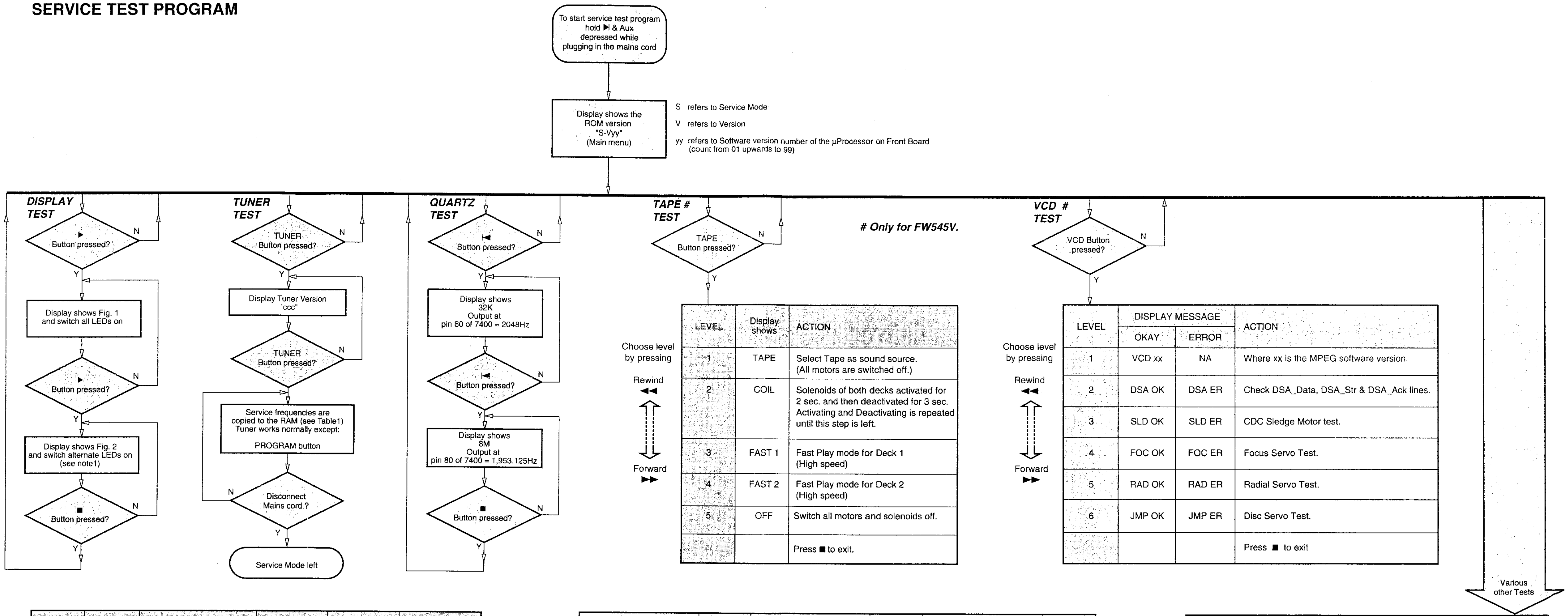
Use a insulation sheet to prevent the AF board from being damaged or short-circuit to any metal parts.

Service pos C



Use a insulation sheet to prevent the ETF board from being damaged or short-circuit to any metal parts.

SERVICE TEST PROGRAM


To start service test program hold ▶| & Aux depressed while plugging in the mains cord
Display shows the ROM version "S-Vyy" (Main menu)
S refers to Service Mode
V refers to Version
yy refers to Software version number of the µProcessor on Front Board (count from 01 upwards to 99)
DISPLAY TEST
▶ Button pressed?
Y
N
Display shows Fig. 1 and switch all LEDs on
▶ Button pressed?
Display shows Fig. 2 and switch alternate LEDs on (see note1)
■ Button pressed?
TUNER TEST
TUNER Button pressed?
Display Tuner Version "ccc"
TUNER Button pressed?
Service frequencies are copied to the RAM (see Table1) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
Service Mode left
QUARTZ TEST
|◀ Button pressed?
Display shows 32K Output at pin 80 of 7400 = 2048Hz
|◀ Button pressed?
Display shows 8M Output at pin 80 of 7400 = 1,953.125Hz
■ Button pressed?
TAPE # TEST
TAPE Button pressed?
# Only for FW545V.
VCD # TEST
VCD Button pressed?
Choose level by pressing
Rewind ◀◀
Forward ▶▶
Various other Tests

LEVEL	Display shows	ACTION
1	TAPE	Select Tape as sound source. (All motors are switched off.)
2	COIL	Solenoids of both decks activated for 2 sec. and then deactivated for 3 sec. Activating and Deactivating is repeated until this step is left.
3	FAST 1	Fast Play mode for Deck 1 (High speed)
4	FAST 2	Fast Play mode for Deck 2 (High speed)
5	OFF	Switch all motors and solenoids off.
		Press ■ to exit.

LEVEL	DISPLAY MESSAGE		ACTION
	OKAY	ERROR	
1	VCD xx	NA	Where xx is the MPEG software version.
2	DSA OK	DSA ER	Check DSA_Data, DSA_Str & DSA_Ack lines.
3	SLD OK	SLD ER	CDC Sledge Motor test.
4	FOC OK	FOC ER	Focus Servo Test.
5	RAD OK	RAD ER	Radial Servo Test.
6	JMP OK	JMP ER	Disc Servo Test.
			Press ■ to exit

PRESET	Europe "EUR"	East Europe Extended-band "EAS"	East Europe "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	531kHz	530kHz	531/530kHz
4	1602kHz	87.5MHz	1602kHz	1700kHz	1602/1700kHz
5	558kHz	531kHz	558kHz	560kHz	558/560kHz
6	1494kHz	1602kHz	1494kHz	1500kHz	1494/1500kHz
7	153kHz	558kHz	87.5MHz	98MHz	87.5MHz
8	279kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz
9	198kHz	98MHz	87.5MHz	87.5MHz	87.5MHz
10	98MHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz
11	87.5MHz	65.81MHz	98MHz	87.5MHz	98MHz

Table 1

Keys activated	Display shows	Keys activated	Display shows	Keys activated	Display shows
No Key pressed	--	RDS *	10	◀◀	21
Any Remote control key	RC	DOLBY B *	11	▶▶	22
DISC CHANGE	1	JOG UP *	12	■ (Exit Test)	
OPEN / CLOSE	2	PROGRAM	13	▶II	24
CD1	3	CD	14	|◀	25
CD2	4	TUNER	15	▶|	26
CD3	5	TAPE	16	INCREDIBLE SURROUND *	27
STANDBY / ON	6	AUX	17	JOG DOWN *	28
CLOCK / TIMER	7	TAPE MODE *	18	DSC	29
DPL *	8	TAPE DUBBING *	19	DBB	30
NEWS *	9	RECORD *	20		

* Not for all type/version.

Table 2

TEST	*Activated with*	*ACTION*
EEPROM TEST	▶▶ ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT TEST	◀◀	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
KEY TEST	▶| ■ to Exit	Key numbers according table 2 are shown on the display.
FAST CLOCK TEST	CLOCK/TIMER	The clock is switched to fast mode. "FAST" is displayed for 1 sec. Press CLOCK/TIMER again to reset the clock to normal. "NORMAL" displayed for 1 sec.
ADC TEST	AUX ■ to Exit	The display shows "ADC1_ww". Press AUX to shows "ADC2_xx", "ADC3_yy" and "ADC4_zz" for an input signal between 0 and 5V, where "ww", "xx", "yy" and "zz" is the ADC value between 0 - 63 representing NTC, SA_1, SA_2 and SA_3 lines respectively. The set will go to standby when temperature is too high (NTC line ADC value is below 19).
VOLUME TEST	Rotary Volume Knob or Jog Shuttle	Display shows volume value for 2 seconds. Volume increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

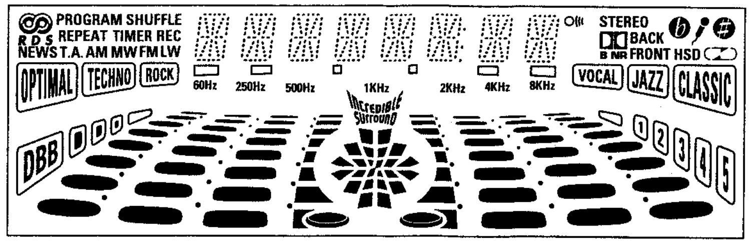
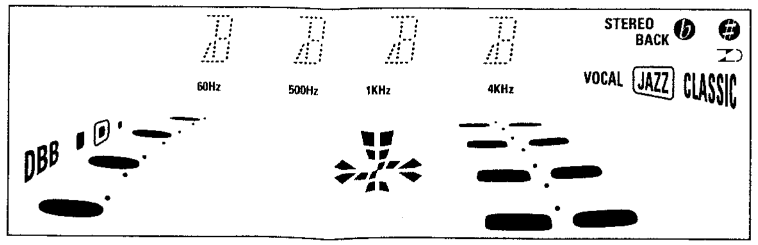

PROGRAM SHUFFLE
REPEAT TIMER REC
R D S
NEWS T.A. AM MW FM LW
STEREO
BACK
B NR FRONT HSD
OPTIMAL
TECHNO
ROCK
60Hz
250Hz
500Hz
1KHz
2KHz
4KHz
8KHz
VOCAL
JAZZ
CLASSIC
DBB
INCREDIBLE SURROUND
1
2
3
4
5

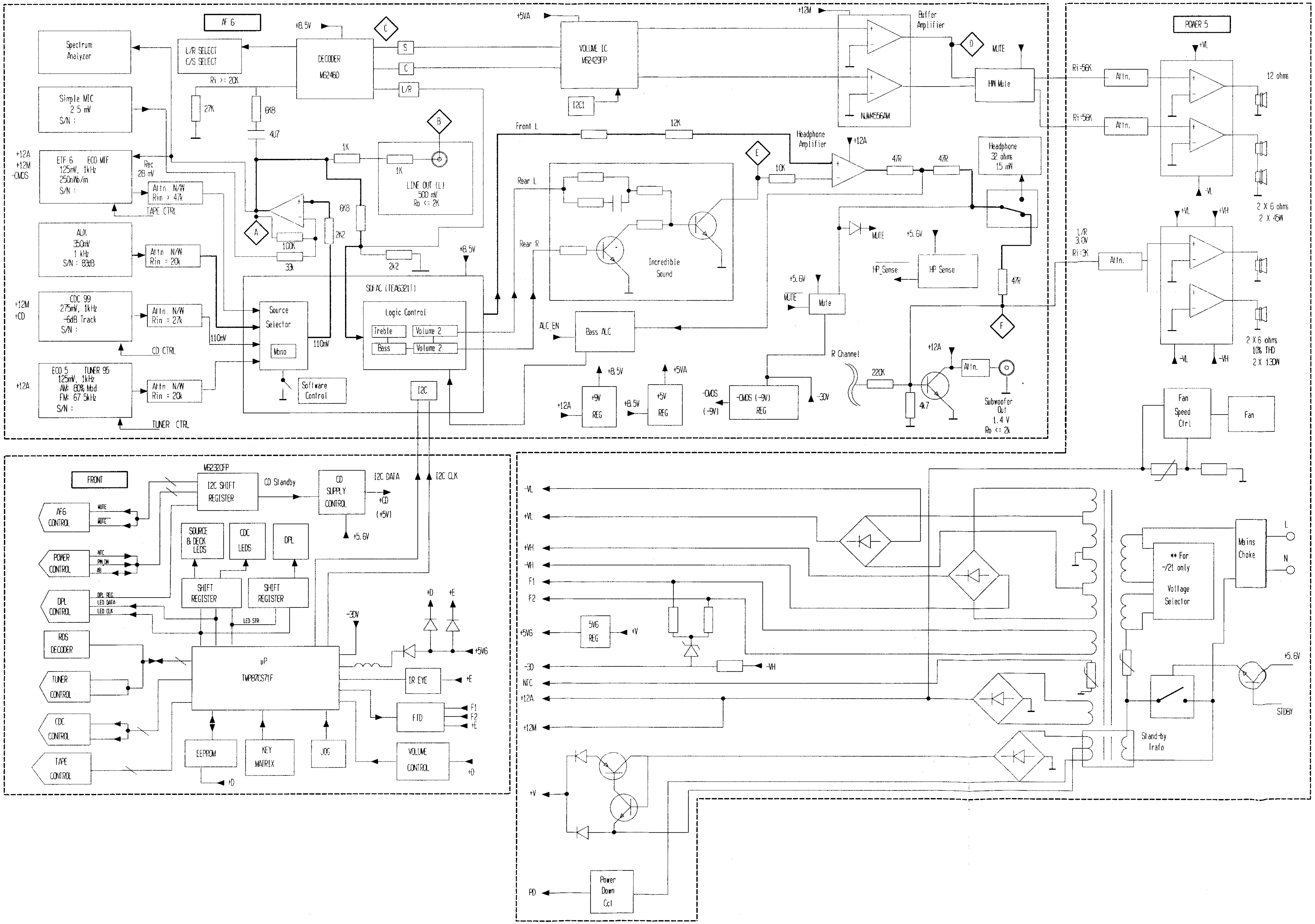
Figure 1


STEREO
BACK
60Hz
500Hz
1KHz
4KHz
VOCAL
JAZZ
CLASSIC
DBB

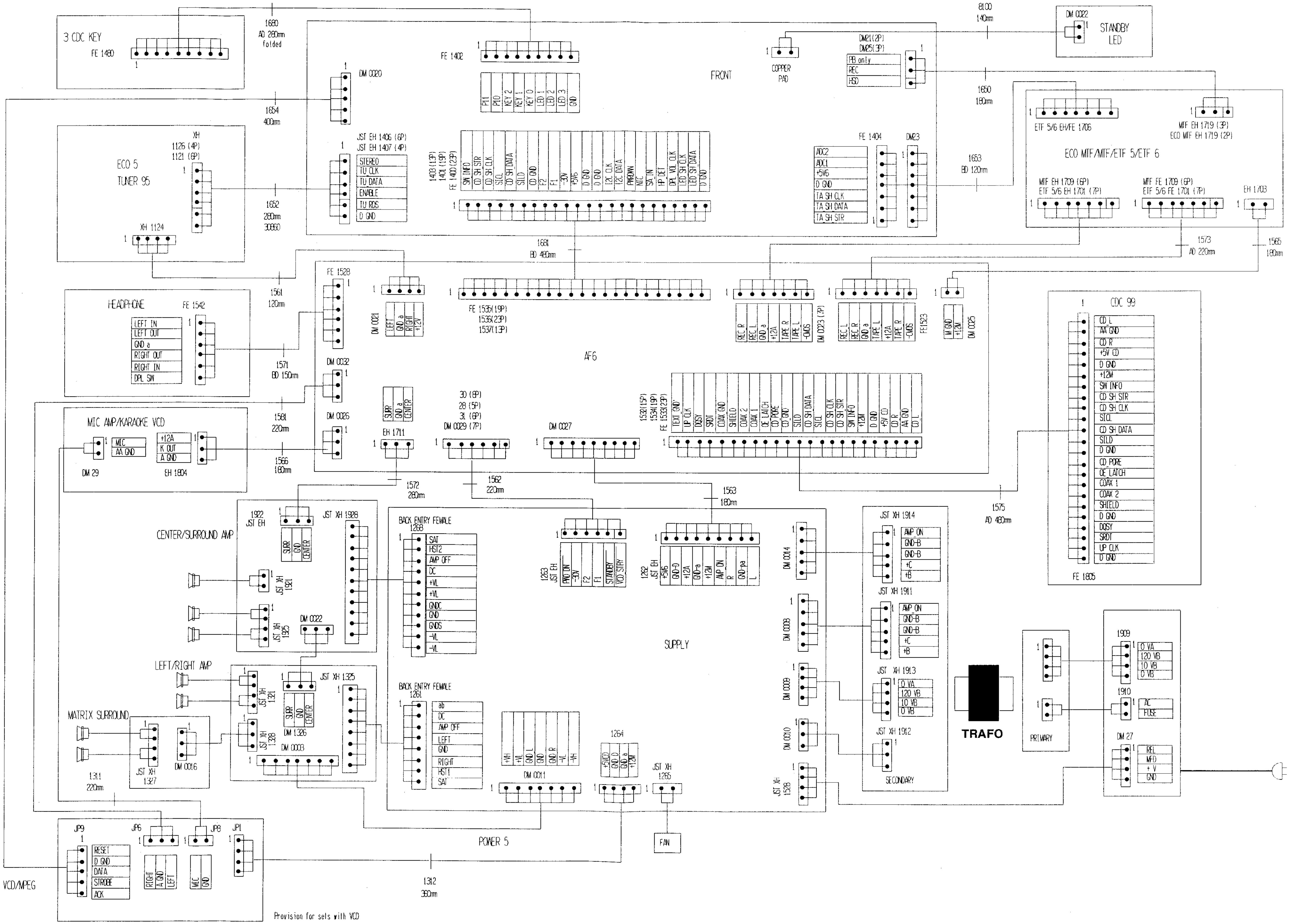
note1 : CDC1, CDC3, CD, Tape, Stereo Right, DPL Surround Left, DPL Centre Left.

Figure 2

SET BLOCK DIAGRAM


AF 6
Spectrum Analyzer
L/R SELECT
C/S SELECT
+8.5V
DECODER
M62460
Ri >= 20K
27K
6K8
4U7
Simple MIC
2.5 mV
S/N :
+12A
+12M
-CMOS
ETF 6 ECO MIF
125mV, 1kHz
250nWb/m
S/N :
Rec
28 mV
Attn N/W
Rin > 47k
TAPE CTRL
AUX
350mV
1 kHz
S/N : 83dB
Attn N/W
Rin = 20k
+12M
+CD
CDC 99
275mV, 1kHz
-6dB Track
S/N :
Attn. N/W
Rin = 27k
CD CTRL
+12A
ECO 5 TUNER 95
125mV, 1kHz
AM: 80% Mod
FM: 67.5kHz
S/N :
Attn N/W
Rin = 20k
TUNER CTRL
A
B
C
S
C
L/R
1K
1K
LINE OUT (L)
500 mV
Ro <= 2K
100K
33k
2k2
6K8
2k2
+8.5V
SOFAC (TEA6321T)
Source Selector
Mono
110mV
110mV
Logic Control
Treble
Volume 2
Bass
Volume 2
Software Control
I2C
+5VA
VOLUME IC
M62429FP
I2C1
+12M
Buffer Amplifier
NJM4556AM
D
MUTE
HW Mute
Front L
12K
Rear L
Rear R
Incredible Sound
E
10K
Headphone Amplifier
+12A
47R
47R
Headphone
32 ohms
15 mW
MUTE
+5.6V
HP Sense
HP_Sense
+5.6V
MUTE
Mute
47R
F
ALC_EN
Bass ALC
R Channel
+8.5V
+5VA
+12A
+9V REG
+8.5V
+5V REG
-CMOS (-9V)
-CMOS (-9V) REG
-30V
220K
4K7
+12A
Attn.
Subwoofer Out
1.4 V
Ro <= 2k
POWER 5
+VL
-VL
Ri=56K
Ri=56K
Attn.
Attn.
12 ohms
2 X 6 ohms
2 X 45W
+VL
+VH
L/R
3.0V
Ri=3K
Attn.
2 X 6 ohms
10% THD
2 X 130W
-VL
-VH
FRONT
M62320FP
I2C SHIFT REGISTER
CD Standby
CD SUPPLY CONTROL
I2C DATA
I2C CLK
+CD
(+5V)
+5.6V
AF6 CONTROL
MUTE
MUTE
POWER CONTROL
NTC
PW_ON
AB
SOURCE & DECK LEDS
CDC LEDS
DPL
DPL CONTROL
DPL REG
LED DATA
LED CLK
SHIFT REGISTER
SHIFT REGISTER
LED STR
RDS DECODER
-30V
+D
+E
+5V6
uP
TMP87CS71F
TUNER CONTROL
IR EYE
+E
CDC CONTROL
FTD
F1
F2
+E
TAPE CONTROL
EEPROM
+D
KEY MATRIX
JOG
VOLUME CONTROL
+D
Fan Speed Ctrl
Fan
-VL
+VL
+VH
-VH
F1
F2
+5V6
5V6 REG
+V
-30
-VH
NTC
+12A
+12M
+V
PD
Power Down Ccl
** For -/21 only
Voltage Selector
Mains Choke
L
N
+5.6V
STDBY
Stand-by Trafo

SET WIRING DIAGRAM


3 CDC KEY
FE 1480
1680
AD 280mm
folded
FE 1402
FRONT
DM 0020
1654
400mm
ECO 5
TUNER 95
XH
1126 (4P)
1121 (6P)
XH 1124
1652
280mm
30860
JST EH 1406 (6P)
JST EH 1407 (4P)
STEREO
TU CLK
TU DATA
ENABLE
TU RDS
D GND
P11
P10
KEY 2
KEY 1
KEY 0
LED 1
LED 2
LED 3
GND
1403 (13P)
1401 (19P)
FE 1400 (23P)
SW INFO
CD SH STR
CD SH CLK
SICL
CD SH DATA
SILD
CD GND
F2
F1
-30V
+5V6
D GND
D GND
I2C CLK
I2C DATA
PWRDWN
N/C
SA IN
HP DET
DPL VOL CLK
LED SH CLK
LED SH DATA
D GND
COPPER PAD
DM21(2P)
DM25(3P)
PB only
REC
HSD
FE 1404
DM23
ADC2
ADC1
+5V6
D GND
TA SH CLK
TA SH DATA
TA SH STR
8100
140mm
DM 0022
STANDBY LED
1650
180mm
1653
BD 120mm
ETF 5/6 EH/FE 1705
MIF EH 1719 (3P)
ECO MIF EH 1719 (2P)
ECO MIF/MIF/ETF 5/ETF 6
MIF EH 1709 (6P)
ETF 5/6 EH 1701 (7P)
MIF FE 1709 (6P)
ETF 5/6 FE 1701 (7P)
EH 1703
1661
BD 480mm
1573
AD 220mm
1565
180mm
1561
120mm
HEADPHONE
FE 1542
LEFT IN
LEFT OUT
GND a
RIGHT OUT
RIGHT IN
DPL SW
1571
BD 150mm
FE 1528
DM 0021
LEFT
GND a
RIGHT
+12V
FE 1535(19P)
1536(23P)
1537(13P)
AF6
REC R
REC L
GND a
+12A
TAPE R
TAPE L
-CASS
DM 0023 (7P)
REC L
REC R
GND a
TAPE L
+12A
TAPE R
-CASS
FE1523
M GND
+12M
DM 0025
DM 0032
DM 0026
1581
220mm
MIC AMP/KARAOKE VCD
MIC
AA GND
+12A
K OUT
A GND
DM 29
EH 1804
1566
180mm
SURR
GND a
CENTER
EH 1711
30 (8P)
28 (5P)
31 (6P)
DM 0029 (7P)
DM 0027
1532(15P)
1534(19P)
FE 1533(23P)
TEXT GND
UP CLK
DOSY
SRDT
COAX GND
SHIELD
COAX 2
COAX 1
OE LATCH
CD PORE
CD GND
SILD
CD SH DATA
SICL
CD SH CLK
CD SH STR
SW INFO
+12M
D GND
+5V CD
CD R
AA GND
CD L
CDC 99
CD L
AA GND
CD R
+5V CD
D GND
+12M
SW INFO
CD SH STR
CD SH CLK
SICL
CD SH DATA
SILD
D GND
CD PORE
OE LATCH
COAX 1
COAX 2
SHIELD
D GND
DOSY
SRDT
UP CLK
D GND
FE 1805
1575
AD 480mm
1572
280mm
1562
220mm
1563
180mm
CENTER/SURROUND AMP
1922
JST EH
JST XH 1926
SURR
GND
CENTER
JST XH 1921
JST XH 1925
DM 0022
BACK ENTRY FEMALE
1268
SAT
HST2
AMP OFF
DC
+VL
+VL
GNDC
GND
GNDS
-VL
-VL
1263
JST EH
PWD DWN
-30V
F2
F1
STANDBY
VCD STBY
1262
JST EH
+5V6
GND-D
+12A
GND-a
+12M
AMP ON
R
GND-pa
L
DM 0014
DM 0008
DM 0009
DM 0010
JST XH 1528
SUPPLY
JST XH 1914
AMP ON
GND-B
GND-B
+C
+B
JST XH 1911
AMP ON
GND-B
GND-B
+C
+B
JST XH 1913
0 VA
120 VB
10 VB
0 VB
JST XH 1912
SECONDARY
TRAFO
PRIMARY
1909
0 VA
120 VB
10 VB
0 VB
1910
AC
FUSE
DM 27
REL
MFD
+ V
GND
LEFT/RIGHT AMP
JST XH 1321
JST XH 1325
JST XH 1328
SURR
GND
CENTER
DM 1326
DM 0003
MATRIX SURROUND
JST XH 1327
DM 0016
1311
220mm
BACK ENTRY FEMALE
1261
ab
DC
AMP OFF
LEFT
GND
RIGHT
HST1
SAT
+VH
+VL
GND L
GND
GND R
-VL
-VH
DM 0011
1264
+5VCD
GND D
GND a
+12M
JST XH
1265
FAN
POWER 5
JP9
JP6
JP8
JP1
RESET
D GND
DATA
STROBE
ACK
RIGHT
A GND
LEFT
MIC
GND
VCD/MPEG
1312
360mm
Provision for sets with VCD

FRONT BOARD

TABLE OF CONTENTS

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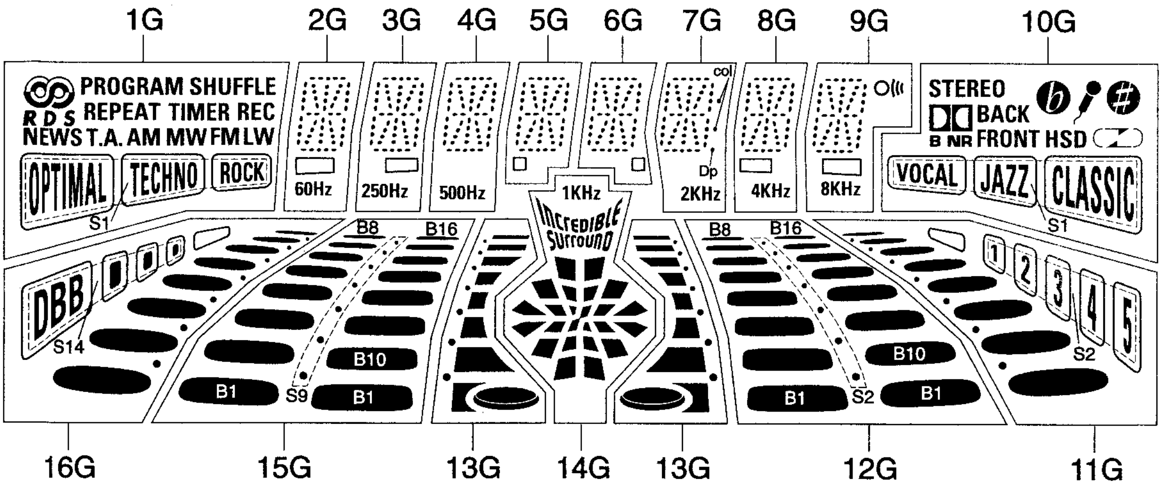
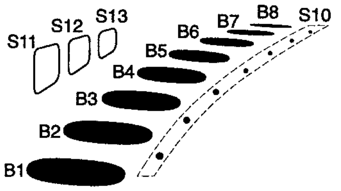
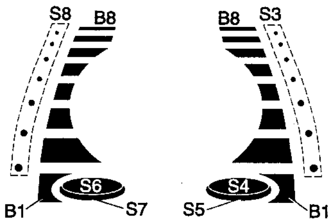
Front Board - Circuit diagram 6-3
Key-CDC part - Layouts & Circuit diagram 6-4
Standby LED part - Layouts & Circuit diagram 6-4
Karaoke part - Component and Chip layouts 6-4
Karaoke part - Circuit diagram 6-5
Electrical parts list 6-6

FTD DISPLAY PIN CONNECTIONS

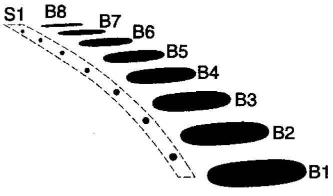

1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
RDS
PROGRAM SHUFFLE
REPEAT TIMER REC
NEWS T.A. AM MW FM LW
OPTIMAL
TECHNO
ROCK
S1
60Hz
250Hz
500Hz
1KHz
col
Dp
2KHz
4KHz
8KHz
STEREO
B NR
BACK
FRONT HSD
VOCAL
JAZZ
CLASSIC
S1
DBB
S14
B8
B16
B10
B1
S9
B1
Incredible Surround
B8
B16
B10
B1
S2
B1
1
2
3
4
5
S2
16G
15G
13G
14G
13G
12G
11G


S11
S12
S13
B6
B7
B8
S10
B5
B4
B3
B2
B1

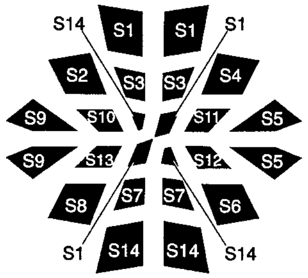
(16G)


S8
B8
B8
S3
S6
B1
S7
S4
S5
B1

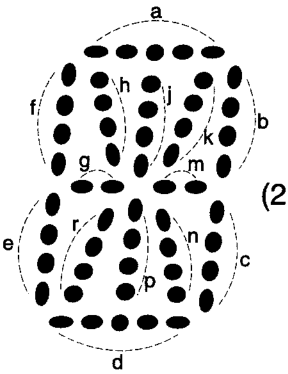
(13G)


S1
B8
B7
B6
B5
B4
B3
B2
B1

(11G)


S14
S1
S1
S1
S2
S3
S3
S4
S9
S10
S11
S5
S9
S13
S12
S5
S8
S7
S7
S6
S1
S14
S14
S14

(14G)


a
f
h
j
b
k
g
m
e
r
n
c
p
d

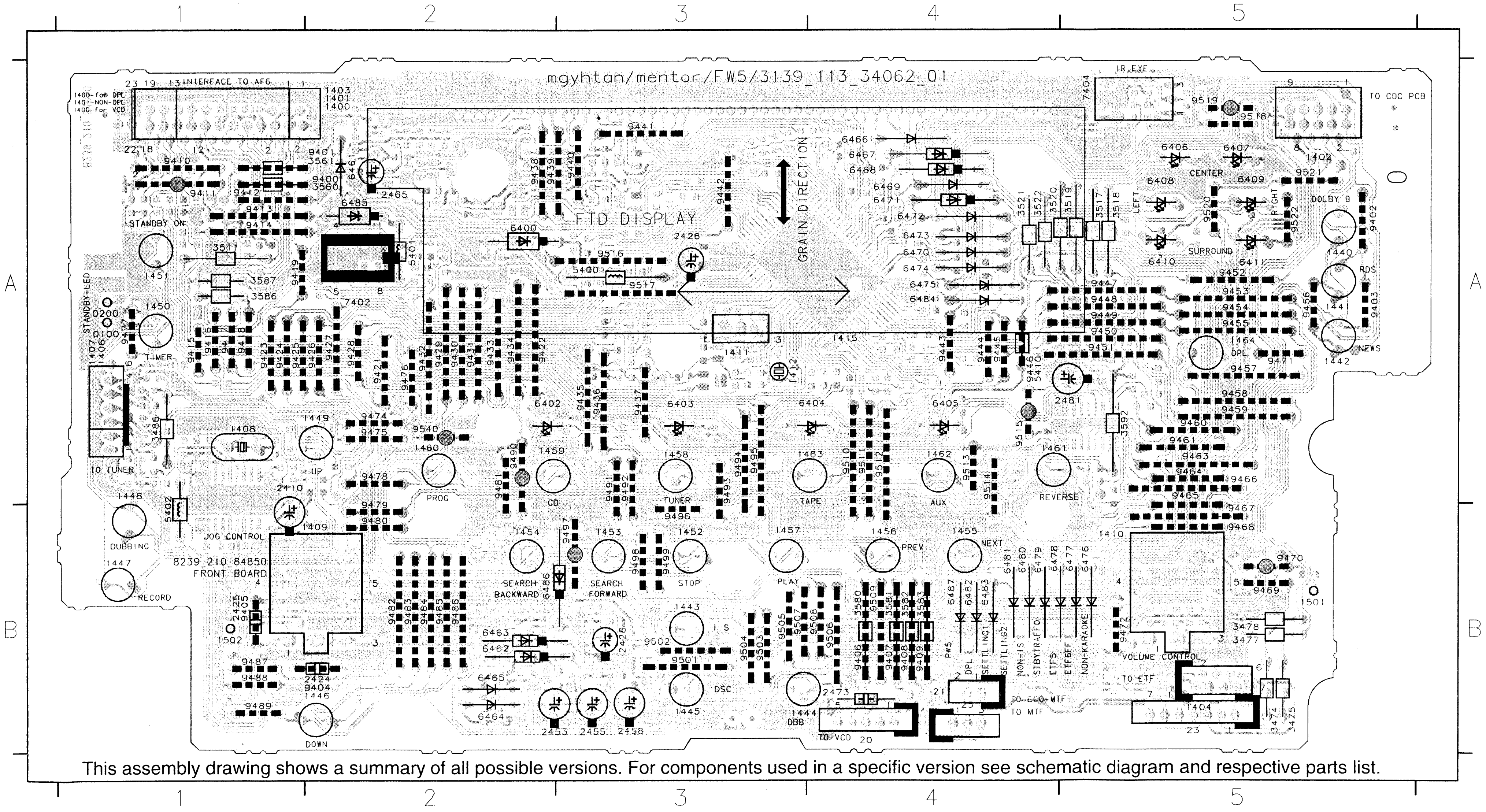
(2G-9G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G
P1	RDS	a	a	a	a	a	a	a	a	STEREO	B1	B1	B1	S1	B1	B1
P2	NEWS	h	h	h	h	h	h	h	h	B NR	B2	B2	B2	S2	B2	B2
P3	T.A.	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	BACK	B3	B3	B3	S3	B3	B3
P4	PROGRAM	k	k	k	k	k	k	k	k	FRONT	B4	B4	B4	S4	B4	B4
P5	SHUFFLE	b	b	b	b	b	b	b	b	b	B5	B5	B5	S5	B5	B5
P6	REPEAT	f	f	f	f	f	f	f	f	🎤	B6	B6	B6	S6	B6	B6
P7	TIMER	m	m	m	m	m	m	m	m	#	B7	B7	B7	S7	B7	B7
P8	REC	g	g	g	g	g	g	g	g	HSD	B8	B8	B8	S8	B8	B8
P9	AM	c	c	c	c	c	c	c	c	Z	S1	S2	S3	S9	S9	S10
P10	MW	e	e	e	e	e	e	e	e	(	▱	B10	S8	S10	B10	▱
P11	FM	r	r	r	r	r	r	r	r	)	S2	B11	-	S11	B11	-
P12	LW	n	n	n	n	n	n	n	n	-	▯ (1)	B12	-	S12	B12	▱ (DBB)
P13	S1	d	d	d	d	d	d	d	d	S1	▯ (2)	B13	S7	S13	B13	S14
P14	▱ (OPTIMAL)	▭	▭	-	□	□	col	▭	▭	(VOCAL) ▭	▯ (3)	B14	S6	S14	B14	S11
P15	▱ (TECHNO)	60Hz	250Hz	500Hz	-	-	2KHz	4KHz	8KHz	(JAZZ) ▱	▯ (4)	B15	S4	1KHz	B15	S12
P16	▭ (ROCK)	-	-	-	-	-	Dp	-	O(((	(CLASSIC) ▱	▯ (5)	B16	S5	Incredible Surround	B16	S13

NOTE :

FRONT BOARD - COMPONENT LAYOUT

20 B4	1408 A1	1447 B1	1460 A2	2455 B3	3519 A5	5400 A3	6410 A5	6472 A4	6485 A2	9408 B4	9422 A2	9435 A3	9448 A5	9461 A5	9476 A2	9489 B1	9503 B3	9516 A3
21 B4	1409 B2	1448 A1	1461 A4	2458 B3	3520 A4	5401 A2	6411 A5	6473 A4	6486 B2	9409 B4	9423 A1	9436 A3	9449 A5	9463 A5	9477 A1	9490 A2	9504 B3	9517 A3
23 B5	1410 B5	1449 A2	1462 A4	2465 A2	3521 A4	5402 B1	6461 A2	6474 A4	6487 B4	9410 A1	9424 A1	9437 A3	9450 A5	9464 A5	9478 A2	9491 A3	9505 B3	9518 A5
25 B4	1411 A3	1450 A1	1463 A4	2473 B4	3522 A4	5410 A4	6462 B2	6475 A4	7402 A2	9411 A1	9425 A1	9438 A2	9451 A5	9465 A5	9479 B2	9492 A3	9506 B4	9519 A5
0100 A1	1412 A3	1451 A1	1464 A5	2481 A5	3560 A2	6400 A2	6463 B2	6476 B5	7404 A5	9412 A1	9426 A2	9439 A2	9452 A5	9466 A5	9480 B2	9493 A3	9507 B3	9520 A5
0200 A1	1415 A4	1452 B3	1501 B5	3474 B5	3561 A2	6402 A2	6464 B2	6477 B5	9400 A2	9413 A1	9427 A2	9440 A3	9453 A5	9467 B5	9481 A2	9494 A3	9508 B4	9521 A5
1400 A2	1440 A5	1453 B3	1502 B1	3475 B5	3580 B4	6403 A3	6465 B2	6478 B4	9401 A2	9414 A1	9428 A2	9441 A3	9454 A5	9468 B5	9482 B2	9495 A3	9509 B4	9522 A5
1401 A2	1441 A5	1454 B2	2410 A1	3477 B5	3581 B4	6404 A4	6466 A4	6479 B4	9402 A5	9415 A1	9429 A2	9442 A3	9455 A5	9469 B5	9483 B2	9496 B3	9510 A4	9540 A2
1402 A5	1442 A5	1455 B4	2424 B2	3478 B5	3582 B4	6405 A4	6467 A4	6480 B4	9403 A5	9416 A1	9430 A2	9443 A4	9456 A5	9470 B5	9484 B2	9497 B3	9511 A4	
1403 A2	1443 B3	1456 B4	2425 B1	3486 A1	3583 B4	6406 A5	6468 A4	6481 B4	9404 B2	9417 A1	9431 A2	9444 A4	9457 A5	9471 A5	9485 B2	9498 B3	9512 A4	
1404 B5	1444 B3	1457 B3	2426 A3	3511 A1	3586 A1	6407 A5	6469 A4	6482 B4	9405 B1	9418 A1	9432 A2	9445 A4	9458 A5	9472 B5	9486 B2	9499 B3	9513 A4	
1406 A1	1445 B3	1458 A3	2428 B3	3517 A5	3587 A1	6408 A5	6470 A4	6483 B4	9406 B4	9419 A1	9433 A2	9446 A4	9459 A5	9474 A2	9487 B1	9501 B3	9514 A4	
1407 A1	1446 B2	1459 A2	2453 B2	3518 A5	3592 A5	6409 A5	6471 A4	6484 A4	9407 B4	9421 A2	9434 A2	9447 A5	9460 A5	9475 A2	9488 B1	9502 B3	9515 A4	

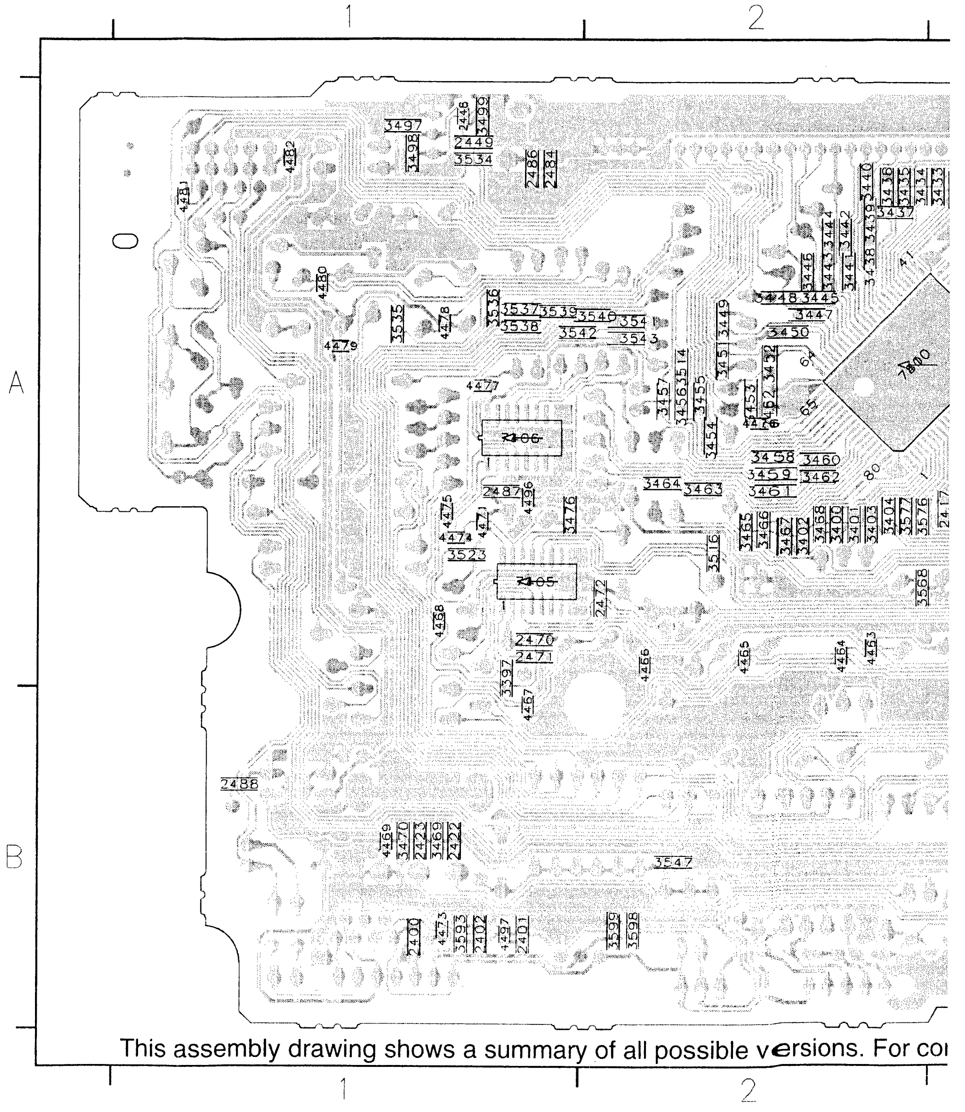

1
2
3
4
5
A
B
mgyhtan/mentor/FW5/3139_113_34062_01
INTERFACE TO AFG
1400-for DPL
1401-NON-DPL
1400-for VCD
IR EYE
TO CDC PCB
FTD DISPLAY
GRAIN DIRECTION
STANDBY ON
STANDBY-LED
TIMER
TO TUNER
DUBBING
RECORD
JOG CONTROL
8239_210_84850
FRONT BOARD
UP
DOWN
PROG
CD
TUNER
TAPE
AUX
REVERSE
SEARCH BACKWARD
SEARCH FORWARD
STOP
PLAY
PREV
NEXT
I S
DSC
DBB
TO VCD
CENTER
LEFT
RIGHT
SURROUND
DOLBY B
RDS
NEWS
DPL
VOLUME CONTROL
TO ETF
TO ECO-MTF
TO MTF
SETTLING1
SETTLING2
NON-IS
STBYTRAFFO
ETFS
ETFFF
NON-KARAOKE

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

● - Solder pad on the component side are for grounding purpose (For double-sided pc board only).

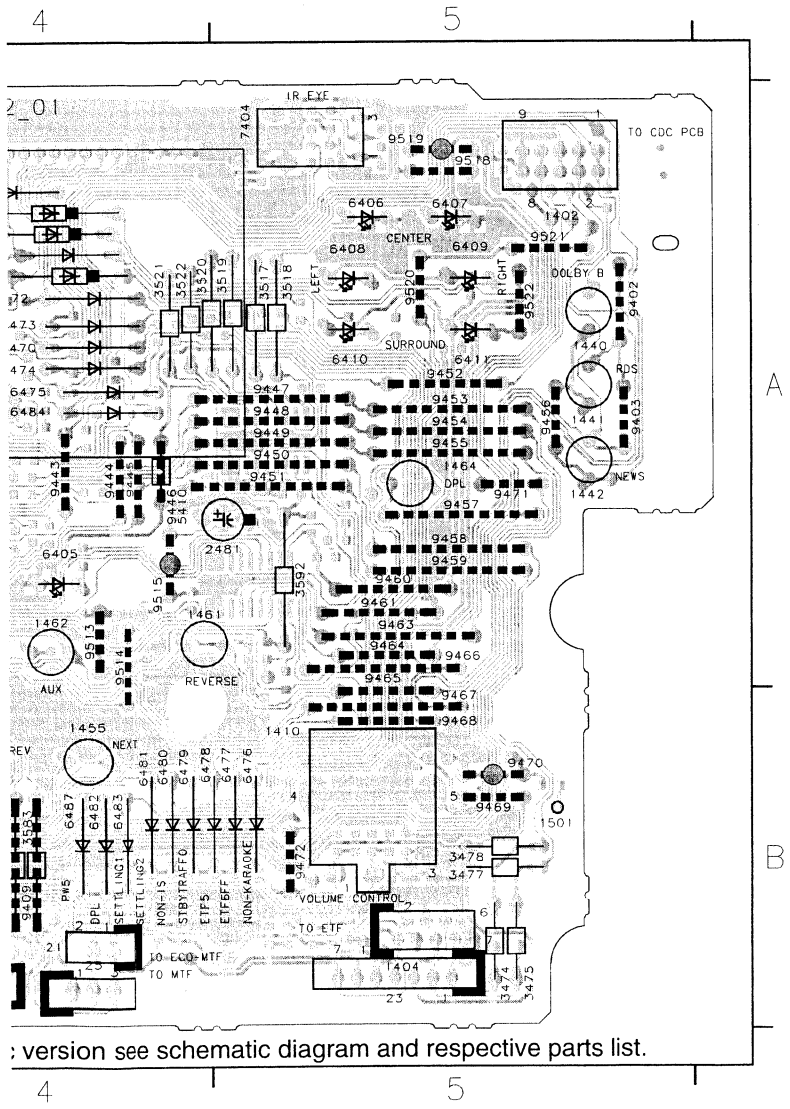
FRONT BOARD - CHIP LAYOUT

2400 B1	2418 A3	2442 A4	2470 A1	3404 A2	3421 A3	3438 A2	3455 A2	3472 B
2401 B1	2419 A3	2445 A4	2471 A1	3405 A3	3422 A3	3439 A2	3456 A2	3473 B
2402 B1	2420 A3	2446 A5	2472 A2	3406 A3	3423 A3	3440 A2	3457 A2	3476 A
2403 A5	2421 A3	2447 A5	2475 A5	3407 A3	3424 A3	3441 A2	3458 A2	3479 A
2404 A5	2422 B1	2448 A1	2482 A3	3408 A3	3425 A3	3442 A2	3459 A2	3480 A
2405 A5	2423 B1	2449 A1	2483 A4	3409 A3	3426 A3	3443 A2	3460 A2	3481 A
2406 A5	2431 A3	2450 A3	2484 A1	3410 A3	3427 A3	3444 A2	3461 A2	3482 A
2407 A5	2432 A3	2451 A3	2485 A4	3411 A3	3428 A3	3445 A2	3462 A2	3483 A
2408 B5	2433 A3	2452 A3	2486 A1	3412 A3	3429 A3	3446 A2	3463 A2	3484 A
2409 B5	2434 A3	2454 B4	2487 A1	3413 A3	3430 A3	3447 A2	3464 A2	3485 A
2411 A5	2435 A3	2456 B4	2488 B1	3414 A3	3431 A3	3448 A2	3465 A2	3487 A
2412 A5	2436 A3	2457 B4	2489 B5	3415 A3	3432 A3	3449 A2	3466 A2	3488 A
2413 A5	2437 A4	2459 B4	3397 A1	3416 A3	3433 A3	3450 A2	3467 A2	3489 B
2414 A5	2438 A4	2460 B4	3400 A2	3417 A3	3434 A2	3451 A2	3468 A2	3490 B
2415 A5	2439 A4	2462 A2	3401 A2	3418 A3	3435 A2	3452 A2	3469 B1	3491 A
2416 A5	2440 A4	2463 A5	3402 A2	3419 A3	3436 A2	3453 A2	3470 B1	3492 A
2417 A3	2441 A4	2464 A5	3403 A2	3420 A3	3437 A2	3454 A2	3471 A3	3493 A



This assembly drawing shows a summary of all possible versions. For co

A2	9435	A3	9448	A5	9461	A5	9476	A2	9489	B1	9503	B3	9516	A3
A1	9436	A3	9449	A5	9463	A5	9477	A1	9490	A2	9504	B3	9517	A3
A1	9437	A3	9450	A5	9464	A5	9478	A2	9491	A3	9505	B3	9518	A5
A1	9438	A2	9451	A5	9465	A5	9479	B2	9492	A3	9506	B4	9519	A5
A2	9439	A2	9452	A5	9466	A5	9480	B2	9493	A3	9507	B3	9520	A5
A2	9440	A3	9453	A5	9467	B5	9481	A2	9494	A3	9508	B4	9521	A5
A2	9441	A3	9454	A5	9468	B5	9482	B2	9495	A3	9509	B4	9522	A5
A2	9442	A3	9455	A5	9469	B5	9483	B2	9496	B3	9510	A4	9540	A2
A2	9443	A4	9456	A5	9470	B5	9484	B2	9497	B3	9511	A4		
A2	9444	A4	9457	A5	9471	A5	9485	B2	9498	B3	9512	A4		
A2	9445	A4	9458	A5	9472	B5	9486	B2	9499	B3	9513	A4		
A2	9446	A4	9459	A5	9474	A2	9487	B1	9501	B3	9514	A4		
A2	9447	A5	9460	A5	9475	A2	9488	B1	9502	B3	9515	A4		


4
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A
B
IR EXT
7404
9519
9518
TO CDC PCB
6406
6407
6408
6409
CENTER
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1402
9520
LEFT
RIGHT
DOLBY B
9402
SURROUND
6410
6411
1440
RDS
9452
9453
9454
9455
9403
9446
1441
1464
DPL
9471
1442
NEWS
9457
9458
9459
6405
2481
9460
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9463
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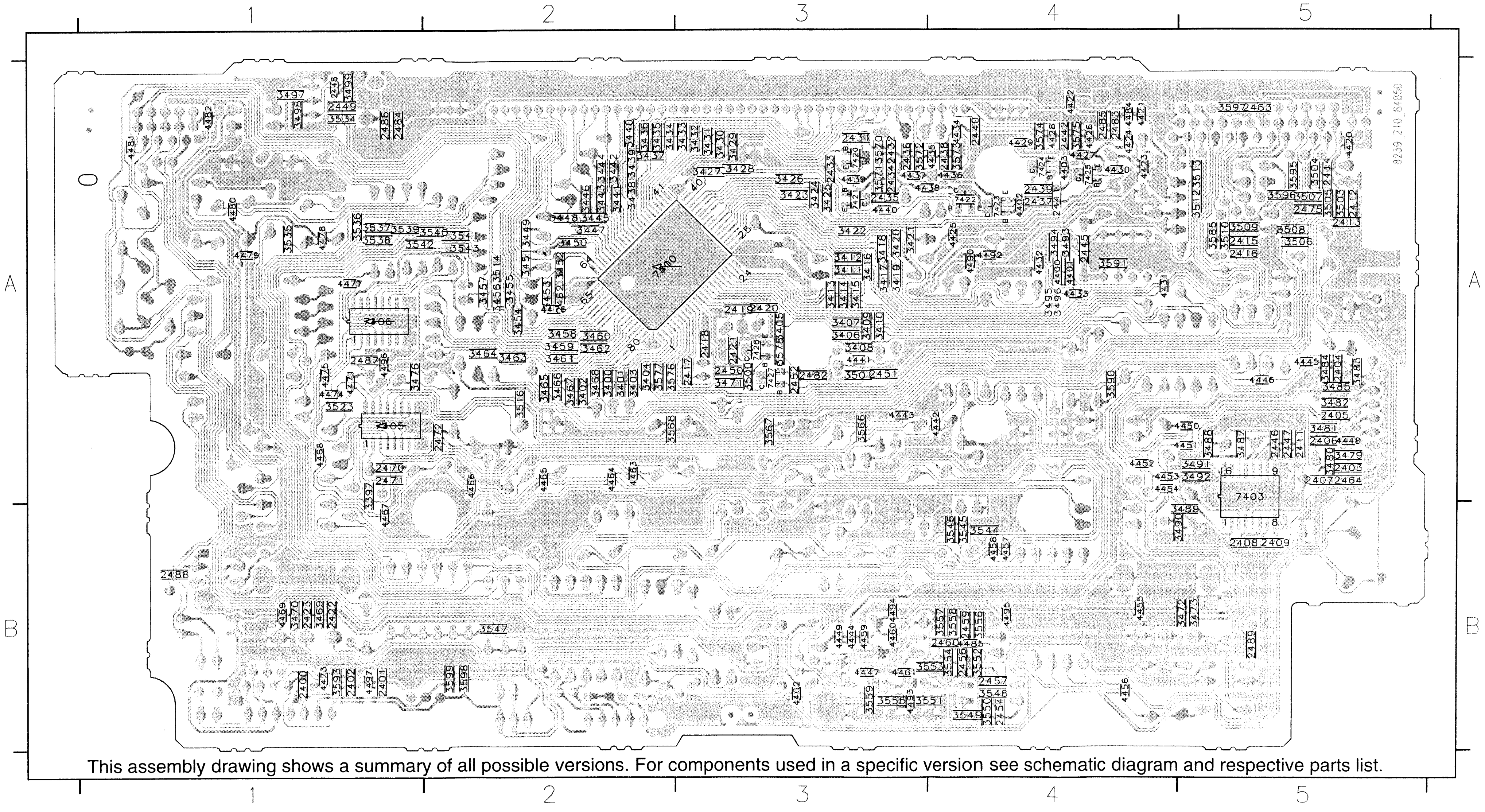
9465
9467
9468
1462
1461
AUX
REVERSE
1455
NEXT
1410
9470
9469
1501
PHS
DPL
SETTLING1
SETTLING2
NON-IS
STBYTRAFFO
ETF5
ETF8F
NON-KARAOKE
VOLUME CONTROL
3478
3477
TO ETF
TO ECO-MTF
TO MTF
1404
3474
3475

: version see schematic diagram and respective parts list.

FRONT BOARD - CHIP LAYOUT

2400	B1	2418	A3	2442	A4	2470	A1	3404	A2	3421	A3	3438	A2	3455	A2	3472	B5	3494	A4	3513	A5	3547	B2	3571	A3	4400	A4	4433	A4	4450	A5	4467	B1	4492	A4	7427	A3
2401	B1	2419	A3	2445	A4	2471	A1	3405	A3	3422	A3	3439	A2	3456	A2	3473	B5	3495	A4	3514	A2	3548	B4	3572	A3	4401	A4	4434	A4	4451	A5	4468	A1	4493	B3		
2402	B1	2420	A3	2446	A5	2472	A2	3406	A3	3423	A3	3440	A2	3457	A2	3476	A1	3496	A4	3516	A2	3549	B4	3573	A4	4402	A4	4435	A4	4452	A4	4469	B1	4494	B3		
2403	A5	2421	A3	2447	A5	2475	A5	3407	A3	3424	A3	3441	A2	3458	A2	3479	A5	3497	A1	3523	A1	3550	B4	3574	A4	4403	A4	4436	A4	4453	A4	4471	A1	4495	B4		
2404	A5	2422	B1	2448	A1	2482	A3	3408	A3	3425	A3	3442	A2	3459	A2	3480	A5	3498	A1	3534	A1	3551	B4	3575	A4	4420	A5	4437	A3	4454	A4	4473	B1	4496	A1		
2405	A5	2423	B1	2449	A1	2483	A4	3409	A3	3426	A3	3443	A2	3460	A2	3481	A5	3499	A1	3535	A1	3552	B4	3576	A2	4421	A4	4438	A4	4455	B4	4474	A1	4497	B1		
2406	A5	2431	A3	2450	A3	2484	A1	3410	A3	3427	A3	3444	A2	3461	A2	3482	A5	3500	A3	3536	A1	3553	B4	3577	A2	4422	A4	4439	A3	4456	B4	4475	A1	7400	A2		
2407	A5	2432	A3	2451	A3	2485	A4	3411	A3	3428	A3	3445	A2	3462	A2	3483	A5	3501	A3	3537	A1	3554	B4	3578	A3	4423	A4	4440	A3	4457	B4	4476	A2	7403	A5		
2408	B5	2433	A3	2452	A3	2486	A1	3412	A3	3429	A3	3446	A2	3463	A2	3484	A5	3503	A5	3538	A1	3555	B3	3585	A5	4424	A4	4441	A3	4458	B4	4477	A1	7405	A1		
2409	B5	2434	A3	2454	B4	2487	A1	3413	A3	3430	A3	3447	A2	3464	A2	3485	A5	3504	A5	3539	A1	3556	B4	3590	A4	4425	A4	4442	A4	4459	B3	4478	A1	7406	A1		
2411	A5	2435	A3	2456	B4	2488	B1	3414	A3	3431	A3	3448	A2	3465	A2	3487	A5	3505	A5	3540	A2	3557	B4	3591	A4	4426	A4	4443	A3	4460	B3	4479	A1	7420	A3		
2412	A5	2436	A3	2457	B4	2489	B5	3415	A3	3432	A3	3449	A2	3466	A2	3488	A5	3506	A5	3541	A2	3558	B4	3593	B1	4427	A4	4444	B3	4461	B3	4480	A1	7421	A3		
2413	A5	2437	A4	2459	B4	3397	A1	3416	A3	3433	A3	3450	A2	3467	A2	3489	B5	3507	A5	3542	A1	3559	B3	3595	A5	4428	A4	4445	A5	4462	B3	4481	A1	7422	A4		
2414	A5	2438	A4	2460	B4	3400	A2	3417	A3	3434	A2	3451	A2	3468	A2	3490	B5	3508	A5	3543	A2	3566	A3	3596	A5	4429	A4	4446	A5	4463	A2	4482	A1	7423	A4		
2415	A5	2439	A4	2462	A2	3401	A2	3418	A3	3435	A2	3452	A2	3469	B1	3491	A5	3509	A5	3544	B4	3567	A3	3597	A5	4430	A4	4447	B3	4464	A2	4484	A4	7424	A4		
2416	A5	2440	A4	2463	A5	3402	A2	3419	A3	3436	A2	3453	A2	3470	B1	3492	A5	3510	A5	3545	B4	3568	A2	3598	B2	4431	A4	4448	A5	4465	A2	4485	B4	7425	A4		
2417	A3	2441	A4	2464	A5	3403	A2	3420	A3	3437	A2	3454	A2	3471	A3	3493	A4	3512	A5	3546	B4	3570	A3	3599	B2	4432	A4	4449	B3	4466	A2	4490	A4	7426	A3		


1
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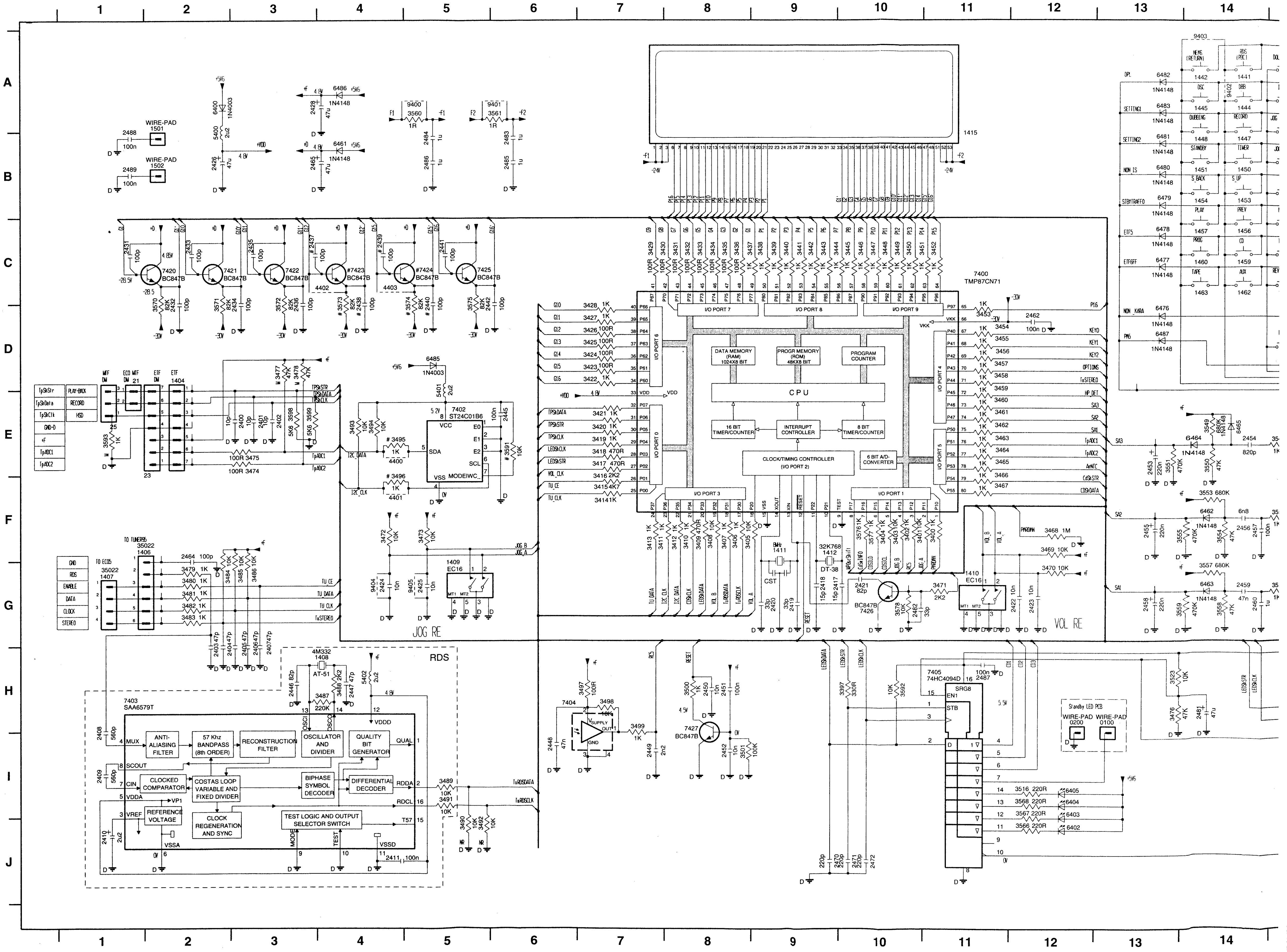
A
B
7400
7403
7405
7406
8239 210 04850

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

FRONT BOARD - CIRCUIT DIAGRAM

20 A20	1402 G20	1411 F9	1445 A14	1453 B14	1461 C15	2402 E3	2410 J1	2418 G9	2426 B2	2437 C3	2447 H4	2455 F13	2464 F2	2482 G10	3397 H10	3407 F8	3415 F7	3423 D7	3431 C8	3439 C9	3447 C10	3455 D11	3463 E11	3471 G11	3479 G2	3487 H4	3495 E4	3504 A18	3512 D18	3521 J16	3539 C15	3547 E15	3555 F14
21 D1	1403 D19	1412 F9	1446 B15	1454 B14	1462 C14	2403 H2	2411 J4	2419 G9	2428 A3	2438 D4	2448 I6	2456 F14	2465 B3	2483 B6	3400 F11	3408 F8	3416 F7	3424 D7	3432 C8	3440 C9	3448 C10	3456 D11	3464 E11	3472 F4	3480 G2	3488 H4	3496 F4	3505 A18	3513 D18	3522 I16	3540 C15	3548 E15	3556 G15
23 E1	1404 D2	1415 B11	1447 B14	1455 C15	1463 C14	2404 H2	2412 B17	2420 G9	2431 C1	2439 C4	2449 I7	2457 F14	2470 J9	2484 B5	3401 F10	3409 F8	3417 E7	3425 D7	3433 C8	3441 C9	3449 C10	3457 D11	3465 E11	3473 F5	3481 G2	3489 I5	3497 H7	3506 B17	3514 G20	3523 H13	3541 C15	3549 E14	3557 G14
25 E1	1406 F1	1440 A15	1448 B14	1456 C14	1464 D15	2405 H3	2413 B17	2421 G10	2432 D2	2440 D5	2450 H8	2458 G13	2471 J10	2485 B6	3402 F10	3410 F8	3418 E7	3426 D7	3434 C8	3442 C9	3450 C10	3458 D11	3466 E11	3474 E3	3482 G2	3490 J5	3498 H7	3507 B18	3516 I12	3534 A15	3542 D15	3550 E14	3558 G14
0100 H13	1407 G1	1441 A14	1449 B15	1457 C14	1501 A2	2406 H3	2414 B17	2422 G12	2433 C2	2441 C5	2451 H8	2459 G14	2472 J10	2486 B5	3403 F10	3411 F7	3419 E7	3427 D7	3435 C8	3443 C9	3451 C11	3459 D11	3467 F11	3475 E3	3483 G2	3491 I5	3499 H7	3508 B17	3517 I16	3535 A15	3543 D15	3551 E13	3559 G14
0200 H12	1408 H4	1442 A14	1450 B14	1458 C15	1502 B2	2407 H3	2415 C17	2423 G12	2434 D3	2442 D5	2452 I8	2460 G14	2473 A20	2487 H11	3404 F10	3412 F8	3420 E7	3428 C7	3436 C8	3444 C10	3452 C11	3460 E11	3468 F12	3476 H13	3484 G2	3492 J5	3500 H8	3509 C18	3518 I16	3536 A15	3544 E16	3552 F15	3560 A5
1400 D18	1409 G5	1443 A15	1451 B14	1459 C14	2400 E3	2408 I1	2416 C17	2424 G4	2435 C3	2445 E6	2453 E13	2462 D12	2475 B17	2488 B1	3405 F8	3413 F7	3421 E7	3429 C7	3437 C9	3445 C10	3453 D11	3461 E11	3469 F12	3477 D3	3485 G3	3493 E4	3501 I8	3510 C18	3519 I16	3537 B15	3545 E16	3553 F14	3561 A6
1401 D18	1410 G11	1444 A14	1452 B15	1460 C14	2401 E3	2409 I1	2417 G9	2425 G5	2436 D3	2446 H3	2454 E14	2463 B18	2481 H14	2489 B1	3406 F8	3414 F7	3422 D7	3430 C8	3438 C9	3446 C10	3454 D11	3462 E11	3470 G12	3478 D3	3486 G3	3494 E4	3503 A18	3511 C17	3520 I16	3538 B15	3546 E15	3554 F14	3566 J12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A
B
C
D
E
F
G
H
I
J
WIRE-PAD 1501
WIRE-PAD 1502
1415
7400 TMP87CN71
I/O PORT 7
I/O PORT 8
I/O PORT 9
I/O PORT 6
I/O PORT 0
I/O PORT 3
I/O PORT 1
I/O PORT 4
I/O PORT 5
DATA MEMORY (RAM) 1024X8 BIT
PROGR MEMORY (ROM) 48KX8 BIT
PROGRAM COUNTER
CPU
16 BIT TIMER/COUNTER
INTERRUPT CONTROLLER
8 BIT TIMER/COUNTER
CLOCK/TIMING CONTROLLER (I/O PORT 2)
6 BIT A/D-CONVERTER
7402 ST24C01B6
VCC
SDA
SCL
VSS
MODEIWC
E0
E1
E2
7420 BC847B
7421 BC847B
7422 BC847B
7423 BC847B
7424 BC847B
7425 BC847B
1409 EC16
JOG RE
1410 EC16
VOL RE
TO TUNER95 35022 1406
TO EC05 35022 1407
GND
RDS
ENABLE
DATA
CLOCK
STEREO
RDS
7403 SAA6579T
MUX
ANTI-ALIASING FILTER
57 Khz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
QUAL
SCOUT
CIN
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
RDDA
RDCL
VDDA
VREF
REFERENCE VOLTAGE
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
T57
VSSA
VSSD
MODE
TEST
4M332 1408 AT-51
7404
SUPPLY
OUT
GND
7427 BC847B
7426 BC847B
1411 8MHz CST
1412 32K768 DT-38
7405 74HC4094D
SRG8
EN1
STB
Standby LED PCB
WIRE-PAD 0200
WIRE-PAD 0100
9403
1N4148
1N4003

2437 C3
2438 D4
2439 C4
2440 D5
2441 C5
2442 D5
2445 E6
2446 H3
2447 H4
2448 I6
2449 I7
2450 H8
2451 H8
2452 I8
2453 E13
2454 E14
2455 F13
2456 F14
2457 F14
2458 G13
2459 G14
2460 G14
2462 D12
2463 B18
2464 F2
2465 B3
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2471 J10
2472 J10
2473 A20
2475 B17
2481 H14
2482 G10
2483 B6
2484 B5
2485 B6
2486 B5
2487 H11
2488 B1
2489 B1
3397 H10
3400 F11
3401 F10
3402 F10
3403 F10
3404 F10
3405 F8
3406 F8
3407 F8
3408 F8
3409 F8
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3486 G3
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3490 J5
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3492 J5
3493 E4
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3518 I16
3519 I16
3520 I16
3521 J16
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3553 F14
3554 F14
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3556 G15
3557 G14
3558 G14
3559 G14
3560 A5
3561 A6
3566 J12
3567 I12
3568 I12
3570 C2
3571 C2
3572 C3
3573 C4
3574 C5
3575 C5
3576 F10
3577 F10
3578 G10
3580 A20
3581 A20
3582 B20
3583 B20
3585 D17
3586 D17
3587 D17
3590 B16
3591 E6
3592 H10
3593 E1
3595 B16
3596 B16
3597 C17
3598 E3
3599 E3
4400 E4
4401 F4
4402 C4
4403 C4
5400 B2
5401 E5
5402 H4
5410 H17
6400 A2
6402 J12
6403 I12
6404 I12
6405 I12
6406 I16
6407 I16
6408 I17
6409 I17
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6486 A4
6487 D13
7400 C11
7402 E5
7403 H1
7404 H6
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7406 H15
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7421 C2
7422 C3
7423 C4
7424 C5
7425 C5
7426 G10
7427 H8
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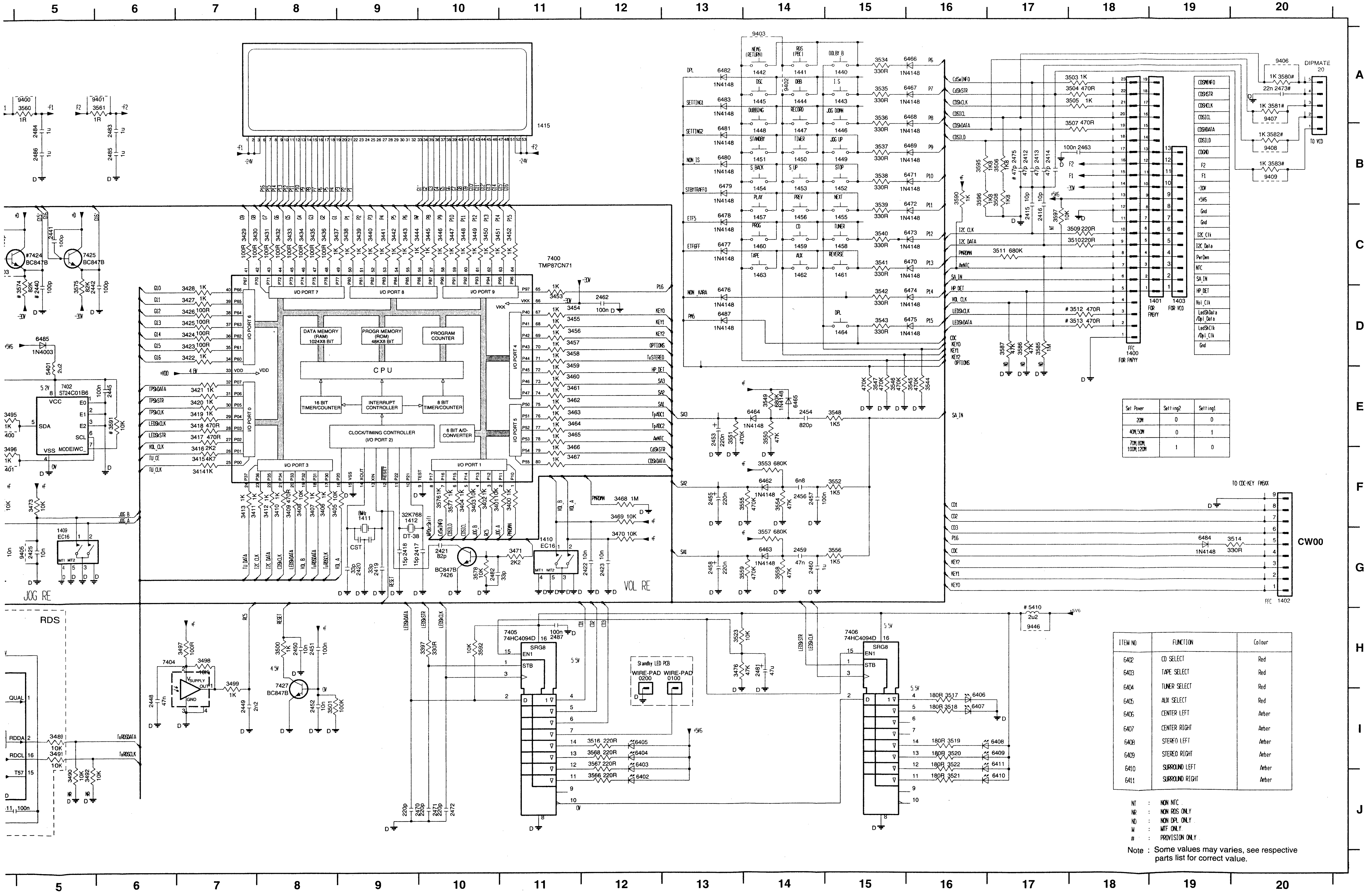
9446 H17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A
B
C
D
E
F
G
H
I
J
1415
7400
TMP87CN71
I/O PORT 7
I/O PORT 8
I/O PORT 9
I/O PORT 6
I/O PORT 0
I/O PORT 4
I/O PORT 5
I/O PORT 3
I/O PORT 1
DATA MEMORY (RAM) 1024X8 BIT
PROGR MEMORY (ROM) 48KX8 BIT
PROGRAM COUNTER
CPU
16 BIT TIMER/COUNTER
INTERRUPT CONTROLLER
8 BIT TIMER/COUNTER
CLOCK/TIMING CONTROLLER (I/O PORT 2)
8 BIT A/D-CONVERTER
7402
ST24C01B6
VCC
SDA
SCL
VSS
MODEIWC_
#7424
BC847B
7425
BC847B
6485
1N4003
9400
9401
1409
EC16
JOG RE
1410
EC16
VOL RE
1411
8MHz
CST
1412
32K768
DT-38
BC847B
7426
RDS
QUAL
RDDA
RDCL
T57
7404
7427
BC847B
7405
74HC4094D
SRG8
7406
74HC4094D
SRG8
EN1
STB
Standby LED PCB
WIRE-PAD 0200
WIRE-PAD 0100
9403
NEWS (RETURN)
RDS (PBC)
DOLBY B
DSC
DBB
I.S
DUBBING
RECORD
JOG DOWN
STANDBY
TIMER
JOG UP
S.BACK
S.UP
STOP
PLAY
PREV
NEXT
PROG
CD
TUNER
TAPE
AUX
REVERSE
DPL
1N4148
1401
FOR FW8YY
1403
FOR VCD
FFC
1400
FOR FW7YY
9406
DIPMATE
TO VCD
9407
9408
9409
TO CDC-KEY FW6XX
CW00
FFC 1402
#5410
2u2
9446
+5V6

Set Power	Setting2	Setting1
20W	0	0
40W,50W	0	1
70W,80W, 100W,120W	1	0

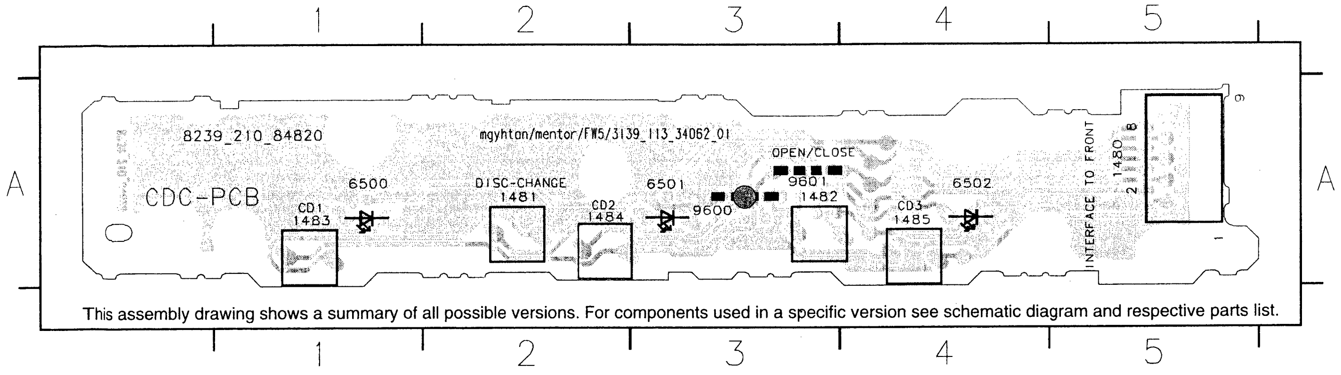
ITEM NO	FUNCTION	Colour
6402	CD SELECT	Red
6403	TAPE SELECT	Red
6404	TUNER SELECT	Red
6405	AUX SELECT	Red
6406	CENTER LEFT	Amber
6407	CENTER RIGHT	Amber
6408	STEREO LEFT	Amber
6409	STEREO RIGHT	Amber
6410	SURROUND LEFT	Amber
6411	SURROUND RIGHT	Amber

NT : NON NTC .
NR : NON RDS ONLY
ND : NON DPL ONLY .
M : MTF ONLY.
# : PROVISION ONLY .

Note : Some values may varies, see respective parts list for correct value.

KEY-CDC BOARD - COMPONENT LAYOUT

1480	1481	1482	1483	1484	1485	6500	6501	6502	9600	9601
A5	A2	A3	A1	A2	A4	A1	A3	A4	A3	A3

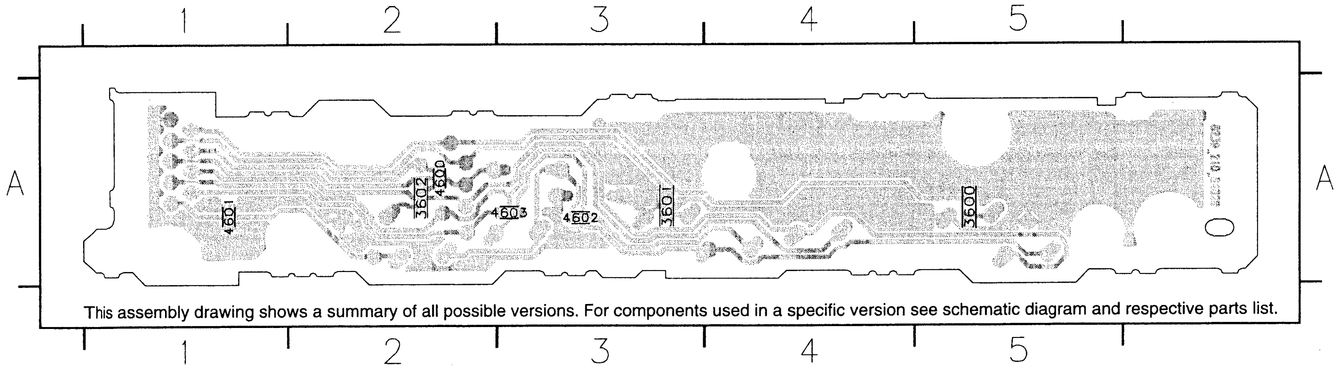

1
2
3
4
5
A
8239_210_84820
mgyhton/mentor/FW5/3139_113_34062_01
CDC-PCB
CD1
1483
6500
DISC-CHANGE
1481
CD2
1484
6501
9600
OPEN/CLOSE
9601
1482
CD3
1485
6502
INTERFACE TO FRONT
1480

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

● - Solder pad on the component side are for grounding purpose (For double-sided pc board only).

KEY-CDC BOARD - CHIP LAYOUT

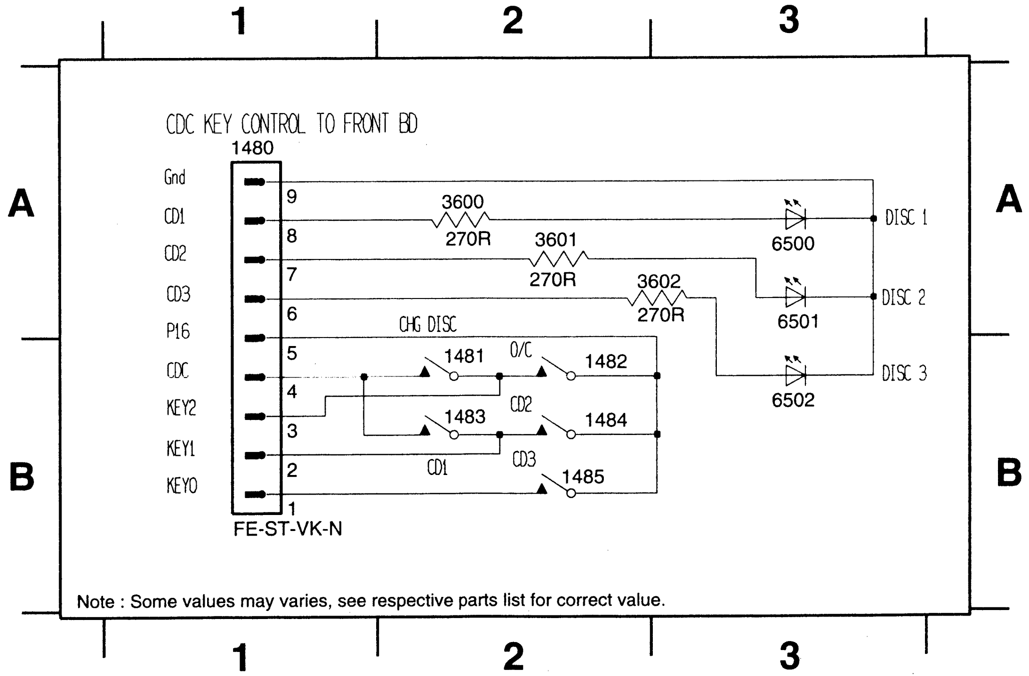
3600	3601	3602	4600	4601	4602	4603
A5	A3	A2	A2	A1	A3	A3


1
2
3
4
5
A
4601
3602
4600
4603
4602
3601
3600

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

KEY-CDC PART - CIRCUIT DIAGRAM

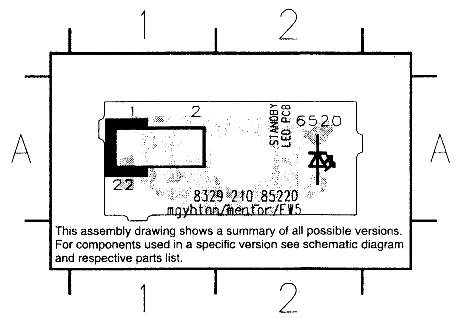
1480	1481	1482	1483	1484	1485	3600	3601	3602	6500	6501	6502
A1	B2	B2	B2	B2	B2	A2	A2	A3	A3	A3	B3


1
2
3
A
B
CDC KEY CONTROL TO FRONT BD
1480
Gnd
CD1
CD2
CD3
P16
CDC
KEY2
KEY1
KEY0
9
8
7
6
5
4
3
2
1
3600
270R
3601
270R
3602
270R
6500
6501
6502
DISC 1
DISC 2
DISC 3
CHG DISC
1481
O/C
1482
1483
CD2
1484
CD1
CD3
1485
FE-ST-VK-N

Note : Some values may varies, see respective parts list for correct value.

STANDBY LED BOARD - COMPONENT LAYOUT

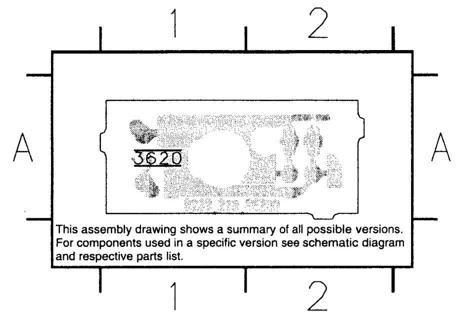
22	6520
A1	A2


1
2
A
22
STANDBY LED PCB
6520
8329 210 85220
mgyhton/mentor/FW5

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

STANDBY LED BOARD - CHIP LAYOUT

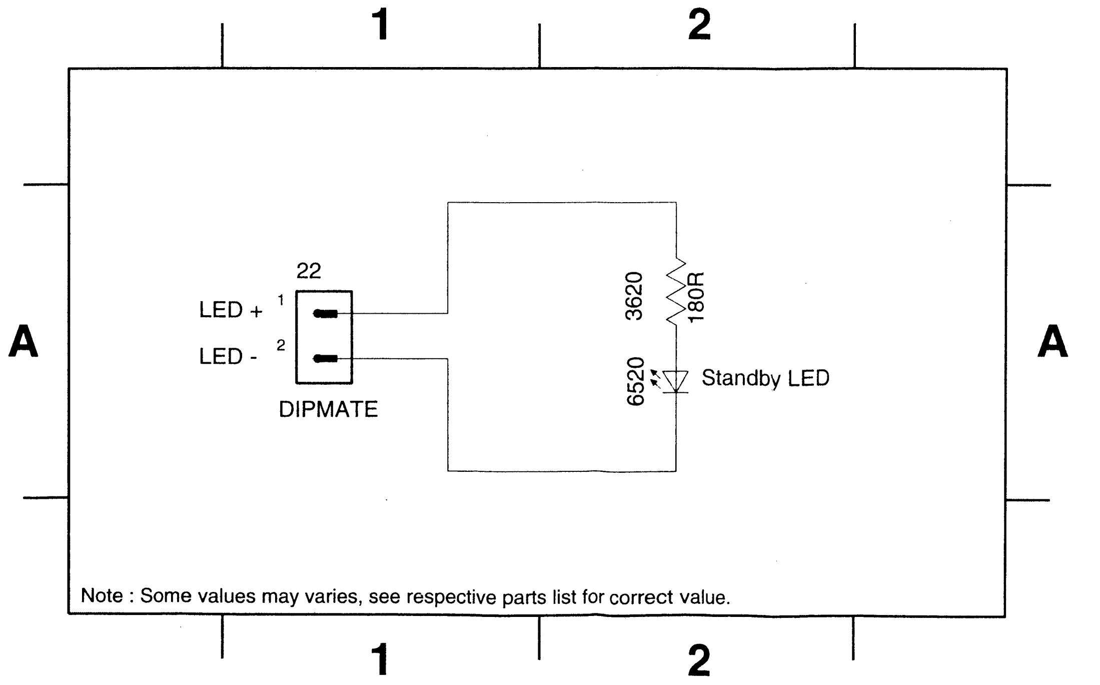
3620
A1



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

STANDBY LED PART - CIRCUIT DIAGRAM

22	3620	6520
A1	A2	A2


1
2
A
22
LED +
LED -
1
2
DIPMATE
3620
180R
6520
Standby LED

Note : Some values may varies, see respective parts list for correct value.

KARAOKE BOA

KARAOKE BOA

)1 A3

A

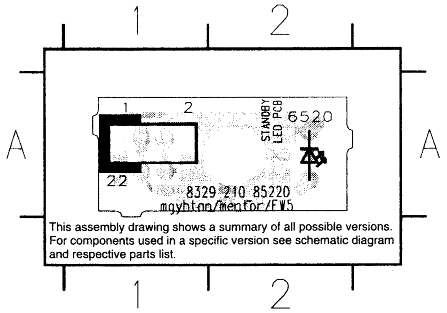
list.

A

list.

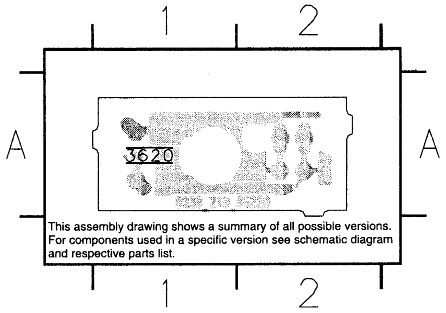
STANDBY LED BOARD - COMPONENT LAYOUT

22 A1 6520 A2


1
2
A
A
22
STANDBY LED PCB
6520
8329 210 85220
mgyhton/mentor/FW5
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

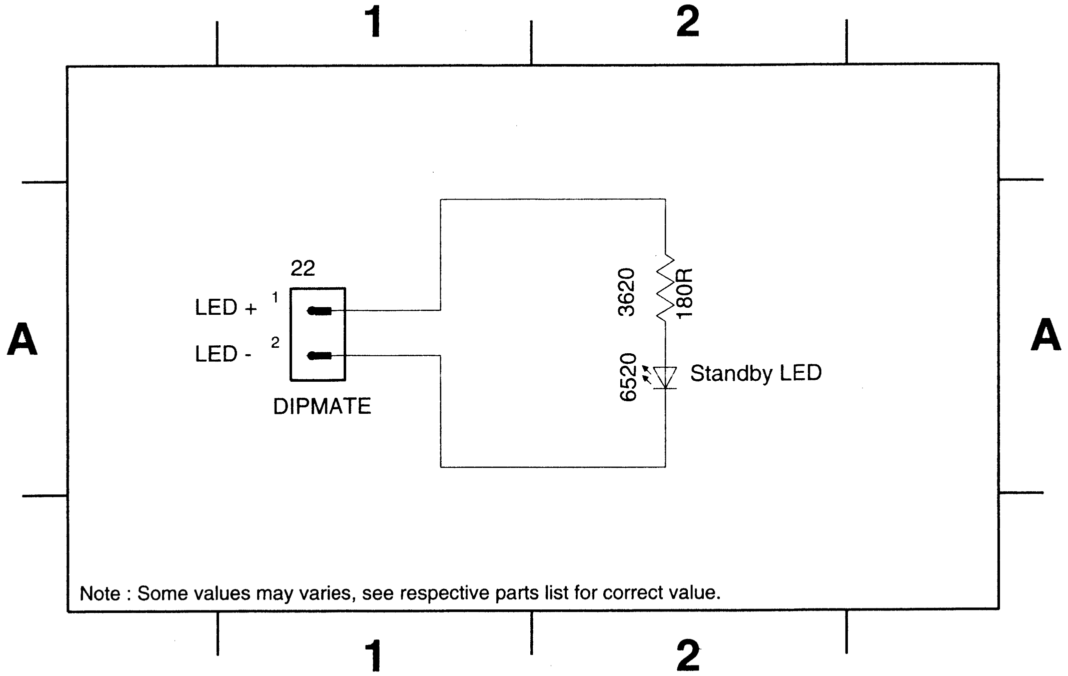
STANDBY LED BOARD - CHIP LAYOUT

3620 A1


1
2
A
A
3620
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

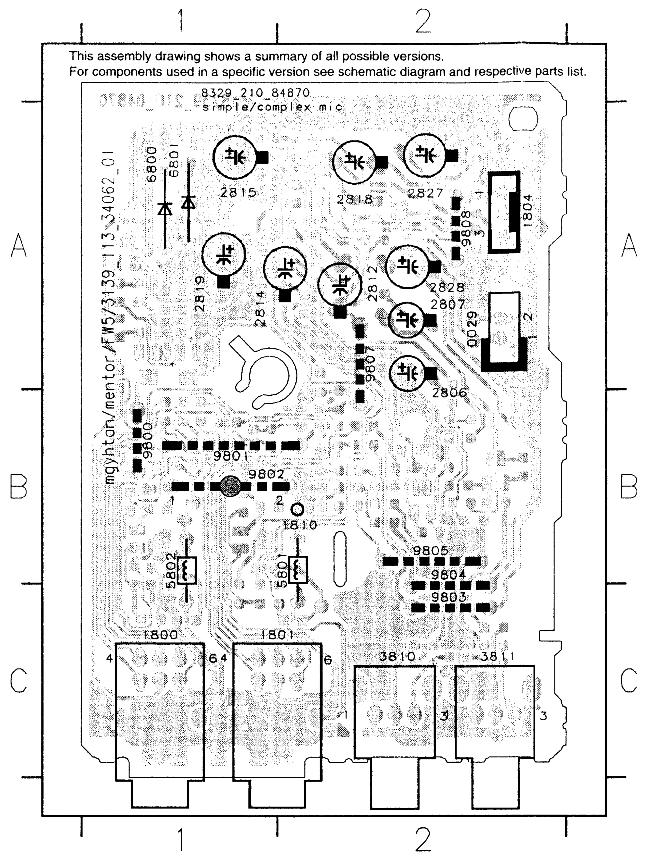
STANDBY LED PART - CIRCUIT DIAGRAM

22 A1 **3620 A2** **6520 A2**


1
2
A
A
22
LED +
LED -
DIPMATE
3620
180R
6520
Standby LED

Note : Some values may varies, see respective parts list for correct value.

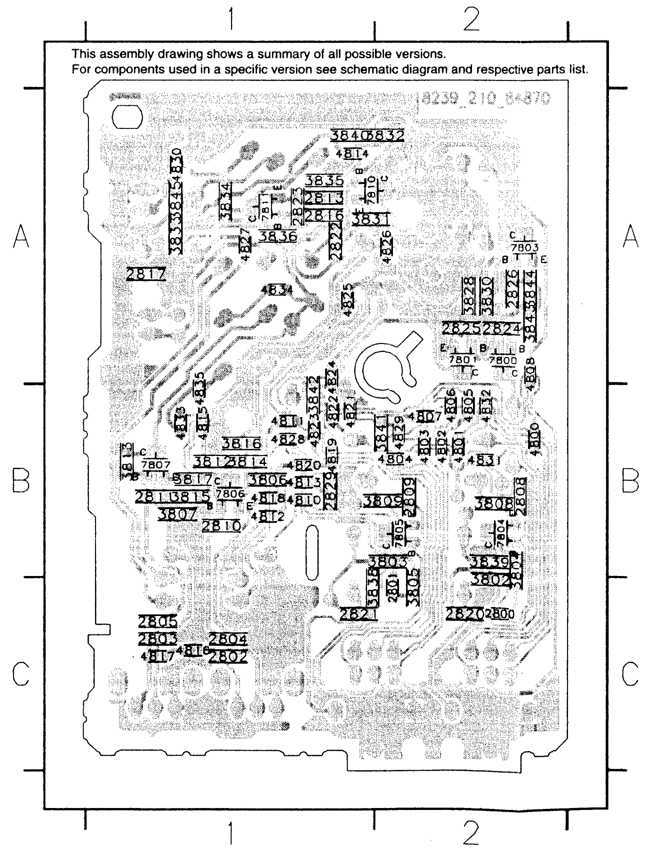
KARAOKE BOARD - COMPONENT LAYOUT


1
2
A
B
C
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.
8329 210 84870
simple/complex mic
mgyhton/mentor/FW5/3139 113 34062_01
6800
6801
2815
2818
2827
1804
2819
2814
2812
2828
2807
0029
9807
2806
9808
9800
9801
9802
1810
5802
5801
9805
9804
9803
1800
1801
3810
3811

0029	A2
1800	C1
1801	C1
1804	A2
1810	B2
2806	B2
2807	A2
2812	A2
2814	A1
2815	A1
2818	A2
2819	A1
2827	A2
2828	A2
3810	C2
3811	C2
5801	B2
5802	B1
6800	A1
6801	A1
9800	B1
9801	B1
9802	B1
9803	C2
9804	B2
9805	B2
9807	A2
9808	A2

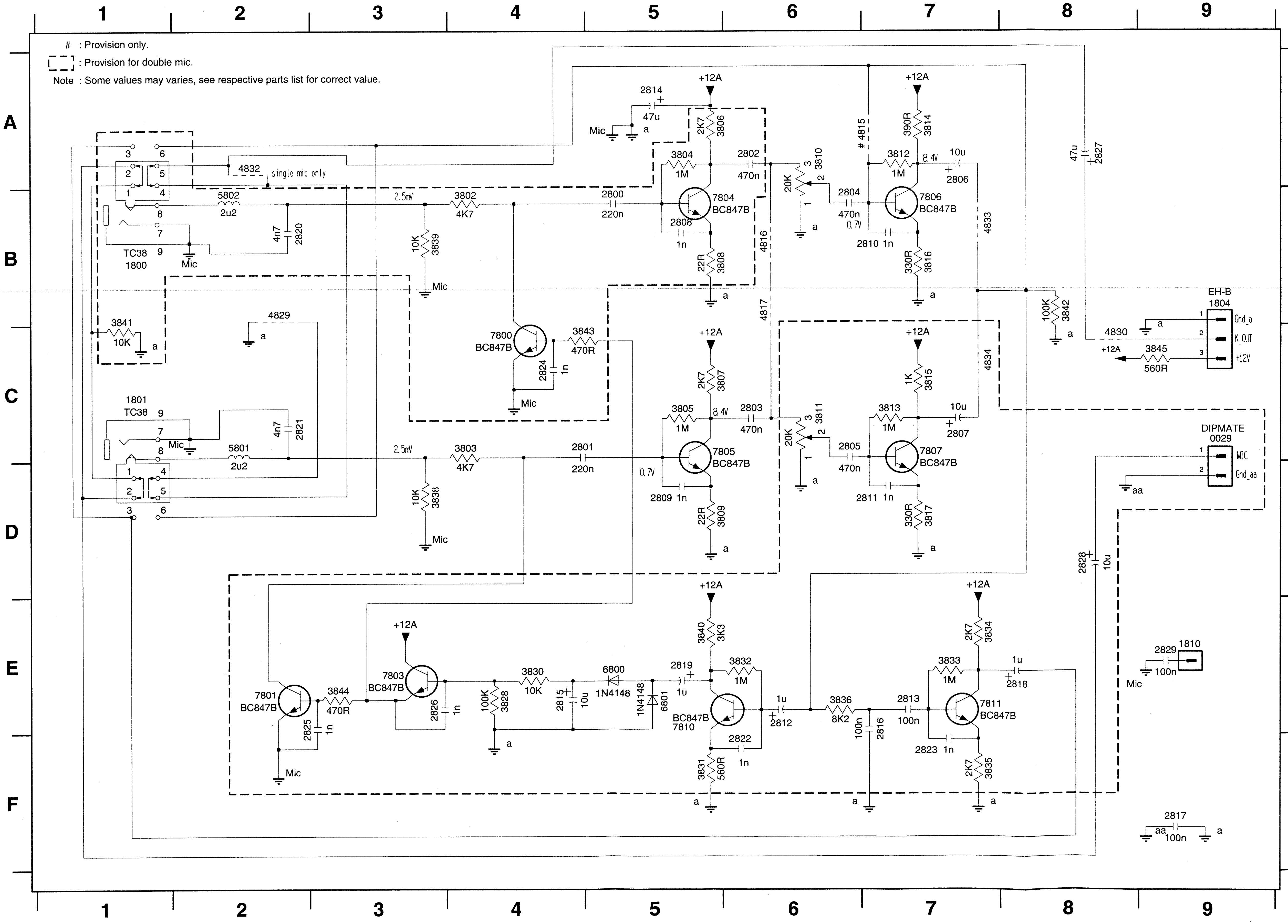
● - Solder pad on the component side are for grounding purpose
(For double-sided pc board only).

KARAOKE BOARD - CHIP LAYOUT


1
2
A
B
C
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.
8239 210 84870

2800	C2	4800	B2
2801	C2	4801	B2
2802	C1	4802	B2
2803	C1	4803	B2
2804	C1	4804	B2
2805	C1	4805	B2
2808	B2	4806	B2
2809	B2	4807	B2
2810	B1	4808	A2
2811	B1	4810	B1
2813	A1	4811	B1
2816	A1	4812	B1
2817	A1	4813	B1
2820	C2	4814	A1
2821	C1	4815	B1
2822	A1	4816	C1
2823	A1	4817	C1
2824	A2	4818	B1
2825	A2	4819	B1
2826	A2	4820	B1
2829	B1	4821	B1
3802	C2	4822	B1
3803	B2	4823	B1
3804	B2	4824	A1
3805	C2	4825	A1
3806	B1	4826	A2
3807	B1	4827	A1
3808	B2	4828	B1
3809	B2	4829	B2
3812	B1	4830	A1
3813	B1	4831	B2
3814	B1	4832	B2
3815	B1	4833	B1
3816	B1	4834	A1
3817	B1	4835	B1
3828	A2	7800	A2
3830	A2	7801	A2
3831	A1	7803	A2
3832	A2	7804	B2
3833	A1	7805	B2
3834	A1	7806	B1
3835	A1	7807	B1
3836	A1	7810	A1
3838	C1	7811	A1
3839	B2		
3840	A1		
3841	B2		
3842	B1		
3843	A2		
3844	A2		
3845	A1		

KARAOKE PART - CIRCUIT DIAGRAM



# : Provision only.

[ ] : Provision for double mic.

Note : Some values may varies, see respective parts list for correct value.

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
TC38
1800
1801
Mic
4832
single mic only
5802
2u2
5801
4n7
2820
2821
2.5mV
3802
4K7
3803
3839
3838
10K
4829
3841
7800
BC847B
2824
1n
3843
470R
2814
47u
+12A
3806
2K7
3804
1M
2802
470n
2800
220n
7804
2808
3808
22R
4816
4817
3810
20K
2804
0.7V
8.4V
3812
4815
3814
390R
2806
10u
7806
2810
3816
330R
4833
4834
2827
3842
100K
EH-B
1804
Gnd_a
K_OUT
+12V
4830
3845
560R
3807
3805
2803
7805
2809
3809
3811
2805
3813
3815
1K
2807
7807
2811
3817
DIPMATE
0029
MIC
Gnd_aa
aa
2828
7801
3844
2825
7803
2826
3828
3830
2815
6800
1N4148
6801
2819
1u
3840
3K3
3832
7810
2822
3831
2812
3836
8K2
2816
100n
2813
3833
3834
7811
2818
2823
3835
2829
1810
2817
a

0029	C9	4815	A7
1800	B1	4816	B6
1801	C1	4817	B6
1804	B9	4829	B2
1810	E9	4830	C8
2800	B5	4832	A2
2801	C4	4833	B7
2802	A6	4834	C7
2803	C6	5801	C2
2804	B6	5802	B2
2805	C6	6800	E5
2806	A7	6801	E5
2807	C7	7800	C4
2808	B5	7801	E2
2809	D5	7803	E3
2810	B7	7804	B5
2811	D7	7805	C5
2812	E6	7806	B7
2813	E7	7807	C7
2814	A5	7810	E5
2815	E4	7811	E7
2816	E7		
2817	F9		
2818	E8		
2819	E5		
2820	B2		
2821	C2		
2822	F6		
2823	F7		
2824	C4		
2825	E2		
2826	E3		
2827	A8		
2828	D8		
2829	E9		
3802	B4		
3803	C4		
3804	A5		
3805	C5		
3806	A5		
3807	C5		
3808	B5		
3809	D5		
3810	A6		
3811	C6		
3812	A7		
3813	C7		
3814	A7		
3815	C7		
3816	B7		
3817	D7		
3828	E4		
3830	E4		
3831	F5		
3832	E6		
3833	E7		
3834	E7		
3835	F7		
3836	E6		
3838	D3		
3839	B3		
3840	E5		
3841	B1		
3842	B8		
3843	C4		
3844	E3		
3845	C9		

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1401	4822 265 11545	Flex Connector 19P
1402	4822 265 11531	Flex Connector 9P
1404	4822 267 10953	Flex Connector 7P
1408	4822 242 72195	QUARZ 4,332MHz
1409	4822 273 10366	Rotary Encoder 24P
1410	4822 273 10365	Rotary Encoder 24P
1411	4822 242 72066	Ceramic Resonator
1412	4822 242 70938	X'tal Resonator 32,768kHz
1415	4822 135 00266	FTD Display /21/21M/30
1415	4822 135 00273	FTD Display /22/37
1441	4822 276 13775	Tact Switch
1442	4822 276 13775	Tact Switch
1443	4822 276 13775	Tact Switch
1444	4822 276 13775	Tact Switch
1445	4822 276 13775	Tact Switch
1447	4822 276 13775	Tact Switch
1448	4822 276 13775	Tact Switch
1450	4822 276 13775	Tact Switch
1451	4822 276 13775	Tact Switch
1452	4822 276 13775	Tact Switch
1453	4822 276 13775	Tact Switch
1454	4822 276 13775	Tact Switch
1455	4822 276 13775	Tact Switch
1456	4822 276 13775	Tact Switch
1457	4822 276 13775	Tact Switch
1458	4822 276 13775	Tact Switch
1459	4822 276 13775	Tact Switch
1460	4822 276 13775	Tact Switch
1461	4822 276 13775	Tact Switch
1462	4822 276 13775	Tact Switch
1463	4822 276 13775	Tact Switch
1480	4822 265 11531	Flex Connector 9P
1481	4822 276 13775	Tact Switch
1482	4822 276 13775	Tact Switch
1483	4822 276 13775	Tact Switch
1484	4822 276 13775	Tact Switch
1485	4822 276 13775	Tact Switch
1801	4822 265 11529	Headphone Socket

CAPACITORS

2400	5322 122 32448	10pF 5% 63V
2401	5322 122 32448	10pF 5% 63V
2402	5322 122 32448	10pF 5% 63V
2403	4822 126 13692	47pF 1% 63V
2404	4822 126 13692	47pF 1% 63V
2405	4822 126 13692	47pF 1% 63V
2406	4822 126 13692	47pF 1% 63V
2407	4822 126 13692	47pF 1% 63V
2408	4822 122 33173	560pF 10% 50V
2409	4822 122 33173	560pF 10% 50V
2410	4822 124 41576	2,2µF 20% 50V
2411	4822 126 13196	100nF 10% 25V
2412	4822 126 13692	47pF 1% 63V
2413	4822 126 13692	47pF 1% 63V
2414	4822 126 13692	47pF 1% 63V
2415	5322 122 32448	10pF 5% 63V
2416	5322 122 32448	10pF 5% 63V
2417	4822 126 13486	15pF 2% 63V
2418	4822 126 13486	15pF 2% 63V
2419	5322 122 32659	33pF 5% 50V
2420	5322 122 32659	33pF 5% 50V
2421	4822 126 13694	68pF 1% 63V
2422	4822 122 33177	10nF 20% 50V
2423	4822 122 33177	10nF 20% 50V
2424	4822 121 51387	10nF 20% 16V
2425	4822 121 51387	10nF 20% 16V
2426	4822 124 80483	47µF 20% 6,3V
2428	4822 124 80483	47µF 20% 6,3V
2429	5322 124 41948	470nF 20% 50V
2430	5322 124 41948	470nF 20% 50V
2431	5322 122 32531	100pF 5% 50V
2432	5322 122 32531	100pF 5% 50V
2433	5322 122 32531	100pF 5% 50V
2434	5322 122 32531	100pF 5% 50V
2435	5322 122 32531	100pF 5% 50V
2436	5322 122 32531	100pF 5% 50V
2441	5322 122 32531	100pF 5% 50V
2442	5322 122 32531	100pF 5% 50V
2445	4822 126 13196	100nF 10% 25V
2446	4822 126 13695	82pF 1% 63V
2447	4822 126 13692	47pF 1% 63V
2448	4822 126 13751	47nF 10% 63V
2449	4822 122 33175	2,2nF 20% 50V
2450	4822 122 33808	10nF 20% 50V
2451	4822 126 13196	100nF 10% 25V
2452	4822 122 33808	10nF 20% 50V
2453	4822 126 13581	0,22µF 20% 50V
2454	5322 126 10184	820pF 5% 50V
2455	4822 126 13581	0,22µF 20% 50V
2456	5322 122 31866	6,8nF 10% 63V
2457	4822 126 13196	100nF 10% 25V
2458	4822 124 40746	0,22µF 20% 63V
2459	4822 126 13751	47nF 10% 63V
2460	4822 126 13836	1µF 16V
2462	4822 126 14118	100nF +80/-20% 50V
2463	4822 126 13196	100nF 10% 25V
2464	5322 122 32531	100pF 5% 50V
2465	4822 124 80483	47µF 20% 6,3V
2470	4822 122 33575	220pF 5% 63V
2471	4822 122 33575	220pF 5% 63V
2472	4822 122 33575	220pF 5% 63V
2481	4822 124 80483	47µF 20% 6,3V
2483	4822 126 13836	1µF 16V
2484	4822 126 13836	1µF 16V

ELECTRICAL PARTS LIST - FRONT BOARD

2485	4822 126 13836	1µF 16V
2486	4822 126 13836	1µF 16V
2487	4822 126 13196	100nF 10% 25V
2488	4822 126 10002	100nF 20% 25V
2489	4822 126 10002	100nF 20% 25V
2801	4822 126 13061	220nF 20% 25V
2803	4822 126 13482	470nF +80/-20% 16V
2804	4822 126 13482	470nF +80/-20% 16V
2806	4822 124 41579	10µF 20% 50V
2809	5322 122 34123	1nF 10% 50V
2810	5322 122 34123	1nF 10% 50V
2814	4822 124 40433	47µF 20% 25V
2817	4822 126 13196	100nF 10% 25V
2821	5322 126 10223	4,7nF 10% 63V
2827	4822 124 41579	10µF 20% 50V
2829	4822 126 10002	100nF 20% 25V

RESISTORS

3397	4822 051 20331	330R 5% 0,1W
3400	4822 051 10102	1k 2% 0,25W
3401	4822 117 10833	10k 1% 0,1W
3402	4822 051 10102	1k 2% 0,25W
3403	4822 117 10833	10k 1% 0,1W
3404	4822 051 20182	1k8 5% 0,1W
3405	4822 117 10833	10k 1% 0,1W
3406	4822 051 10102	1k 2% 0,25W
3407	4822 051 10102	1k 2% 0,25W
3408	4822 117 10833	10k 1% 0,1W
3409	4822 051 20471	470R 5% 0,1W
3410	4822 051 10102	1k 2% 0,25W
3411	4822 051 10102	1k 2% 0,25W
3412	4822 051 10102	1k 2% 0,25W
3413	4822 051 10102	1k 2% 0,25W
3414	4822 051 10102	1k 2% 0,25W
3415	4822 051 10102	1k 2% 0,25W
3416	4822 117 11449	2k2 1% 0,1W
3417	4822 051 20471	470R 5% 0,1W
3418	4822 051 20471	470R 5% 0,1W
3419	4822 051 10102	1k 2% 0,25W
3420	4822 051 10102	1k 2% 0,25W
3421	4822 051 10102	1k 2% 0,25W
3422	4822 051 10102	1k 2% 0,25W
3423	4822 051 20101	100R 5% 0,1W
3424	4822 051 20101	100R 5% 0,1W
3425	4822 051 20101	100R 5% 0,1W
3426	4822 051 20101	100R 5% 0,1W
3427	4822 051 10102	1k 2% 0,25W
3428	4822 051 10102	1k 2% 0,25W
3429	4822 051 20101	100R 5% 0,1W
3430	4822 051 20101	100R 5% 0,1W
3431	4822 051 20101	100R 5% 0,1W
3432	4822 051 20101	100R 5% 0,1W
3433	4822 051 20101	100R 5% 0,1W
3434	4822 051 20101	100R 5% 0,1W
3435	4822 051 20101	100R 5% 0,1W
3436	4822 051 20101	100R 5% 0,1W
3437	4822 051 10102	1k 2% 0,25W
3438	4822 051 10102	1k 2% 0,25W
3439	4822 051 10102	1k 2% 0,25W
3440	4822 051 10102	1k 2% 0,25W
3441	4822 051 10102	1k 2% 0,25W
3442	4822 051 10102	1k 2% 0,25W
3443	4822 051 10102	1k 2% 0,25W
3444	4822 051 10102	1k 2% 0,25W
3445	4822 051 10102	1k 2% 0,25W
3446	4822 051 10102	1k 2% 0,25W
3447	4822 051 10102	1k 2% 0,25W
3448	4822 051 10102	1k 2% 0,25W
3449	4822 051 10102	1k 2% 0,25W
3450	4822 051 10102	1k 2% 0,25W
3451	4822 051 10102	1k 2% 0,25W
3452	4822 051 10102	1k 2% 0,25W
3453	4822 051 10102	1k 2% 0,25W
3454	4822 051 10102	1k 2% 0,25W
3455	4822 051 10102	1k 2% 0,25W
3456	4822 051 10102	1k 2% 0,25W
3457	4822 051 10102	1k 2% 0,25W
3458	4822 051 10102	1k 2% 0,25W
3459	4822 051 10102	1k 2% 0,25W
3460	4822 051 10102	1k 2% 0,25W
3461	4822 051 10102	1k 2% 0,25W
3462	4822 051 10102	1k 2% 0,25W
3463	4822 051 10102	1k 2% 0,25W
3464	4822 051 10102	1k 2% 0,25W
3465	4822 051 10102	1k 2% 0,25W
3466	4822 051 10102	1k 2% 0,25W
3467	4822 051 10102	1k 2% 0,25W
3468	4822 051 20105	1M 5% 0,1W
3469	4822 117 10833	10k 1% 0,1W
3470	4822 117 10833	10k 1% 0,1W
3471	4822 117 11449	2k2 1% 0,1W
3472	4822 117 10833	10k 1% 0,1W
3473	4822 117 10833	10k 1% 0,1W
3474	4822 116 52175	100R 5% 0,5W
3475	4822 116 52175	100R 5% 0,5W
3476	4822 117 10834	47k 1% 0,1W
3479	4822 051 10102	1k 2% 0,25W
3480	4822 051 10102	1k 2% 0,25W
3481	4822 051 10102	1k 2% 0,25W
3482	4822 051 10102	1k 2% 0,25W
3483	4822 051 10102	1k 2% 0,25W
3484	4822 117 10833	10k 1% 0,1W
3485	4822 117 10833	10k 1% 0,1W
3486	4822 116 83864	10k 5% 0,5W

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3487	4822 117 13579	220k 1% 0,1W
3488	4822 117 11449	2k2 1% 0,1W
3489	4822 117 10833	10k 1% 0,1W
3490	4822 117 10833	10k 1% 0,1W
3491	4822 117 10833	10k 1% 0,1W
3492	4822 117 10833	10k 1% 0,1W
3493	4822 117 10833	10k 1% 0,1W
3494	4822 117 10833	10k 1% 0,1W
3497	4822 051 20101	100R 5% 0,1W
3498	4822 117 10833	10k 1% 0,1W
3499	4822 051 10102	1k 2% 0,25W
3500	4822 051 10102	1k 2% 0,25W
3501	4822 051 20104	100k 5% 0,1W
3503	4822 051 10102	1k 2% 0,25W
3504	4822 051 20471	470R 5% 0,1W
3505	4822 051 20471	470R 5% 0,1W
3506	4822 051 20182	1k8 5% 0,1W
3507	4822 051 20471	470R 5% 0,1W
3508	4822 051 20182	1k8 5% 0,1W
3509	4822 117 11503	220R 1% 0,1W
3510	4822 117 11503	220R 1% 0,1W
3511	4822 116 52298	680k 5% 0,5W
3514	4822 051 20331	330R 5% 0,1W
3516	4822 117 11503	220R 1% 0,1W
3523	4822 117 10833	10k 1% 0,1W
3534	4822 051 20331	330R 5% 0,1W
3535	4822 051 20331	330R 5% 0,1W
3536	4822 051 20331	330R 5% 0,1W
3537	4822 051 20331	330R 5% 0,1W
3538	4822 051 20331	330R 5% 0,1W
3539	4822 051 20331	330R 5% 0,1W
3540	4822 051 20331	330R 5% 0,1W
3541	4822 051 20331	330R 5% 0,1W
3542	4822 051 20331	330R 5% 0,1W
3543	4822 051 20331	330R 5% 0,1W
3544	4822 051 20474	470k 5% 0,1W
3545	4822 051 20474	470k 5% 0,1W
3546	4822 051 20474	470k 5% 0,1W
3547	4822 051 20474	470k 5% 0,1W
3548	4822 117 11139	1k5 1% 0,1W
3549	4822 051 20684	680k 5% 0,1W
3550	4822 117 10834	47k 1% 0,1W
3551	4822 051 20474	470k 5% 0,1W
3552	4822 117 11139	1k5 1% 0,1W
3553	4822 051 20684	680k 5% 0,1W
3554	4822 117 10834	47k 1% 0,1W
3555	4822 051 20474	470k 5% 0,1W
3556	4822 117 11139	1k5 1% 0,1W
3557	4822 051 20684	680k 5% 0,1W
3558	4822 117 10834	47k 1% 0,1W
3559	4822 051 20474	470k 5% 0,1W
3560	4822 116 80176	1E 5% 0,5W
3561	4822 116 80176	1E 5% 0,5W
3566	4822 117 11503	220R 1% 0,1W
3567	4822 117 11503	220R 1% 0,1W
3568	4822 117 11503	220R 1% 0,1W
3570	4822 117 11149	82k 1% 0,1W
3571	4822 117 11149	82k 1% 0,1W
3572	4822 117 11149	82k 1% 0,1W
3575	4822 117 11149	82k 1% 0,1W
3576	4822 051 10102	1k 2% 0,25W
3577	4822 051 20182	1k8 5% 0,1W
3578	4822 117 10833	10k 1% 0,1W
3585	4822 051 20105	1M 5% 0,1W
3586	4822 116 83884	47k 5% 0,5W
3587	4822 116 83884	47k 5% 0,5W
3592	4822 116 83864	10k 5% 0,5W
3595	4822 051 20182	1k8 5% 0,1W
3596	4822 051 20182	1k8 5% 0,1W
3600	4822 117 11504	270R 1% 0,1W
3601	4822 117 11504	270R 1% 0,1W
3602	4822 117 11504	270R 1% 0,1W
3620	4822 117 11448	180R 1% 0,1W
3803	4822 051 20472	4k7 5% 0,1W
3805	4822 051 20105	1M 5% 0,1W
3807	4822 117 12955	2k7 1% 0,1W
3809	4822 051 20229	22R 5% 0,1W
3810	4822 101 21204	20kA POTM
3812	4822 051 20105	1M 5% 0,1W
3814	4822 051 20391	390R 5% 0,1W
3816	4822 051 20331	330R 5% 0,1W
3838	4822 117 10833	10k 1% 0,1W
3842	4822 051 20104	100k 5% 0,1W
3845	4822 051 20561	560R 5% 0,1W
4400	4822 051 20008	0R Jumper 0805
4401	4822 051 20008	0R Jumper 0805
4402	4822 051 20008	0R Jumper 0805
4403	4822 051 20008	0R Jumper 0805
4420	4822 051 20008	0R Jumper 0805
4421	4822 051 20008	0R Jumper 0805
4422	4822 051 20008	0R Jumper 0805
4423	4822 051 20008	0R Jumper 0805
4424	4822 051 20008	0R Jumper 0805
4425	4822 051 20008	0R Jumper 0805
4426	4822 051 20008	0R Jumper 0805
4427	4822 051 20008	0R Jumper 0805
4428	4822 051 20008	0R Jumper 0805
4429	4822 051 20008	0R Jumper 0805
4430	4822 051 20008	0R Jumper 0805
4431	4822 051 20008	0R Jumper 0805
4432	4822 051 20008	0R Jumper 0805
4433	4822 051 20008	0R Jumper 0805
4434	4822 051 20008	0R Jumper 0805
4435	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - FRONT BOARD

4436	4822 051 20008	0R Jumper 0805
4437	4822 051 20008	0R Jumper 0805
4438	4822 051 20008	0R Jumper 0805
4439	4822 051 20008	0R Jumper 0805
4440	4822 051 20008	0R Jumper 0805
4441	4822 051 20008	0R Jumper 0805
4442	4822 051 20008	0R Jumper 0805
4443	4822 051 20008	0R Jumper 0805
4445	4822 051 20008	0R Jumper 0805
4446	4822 051 20008	0R Jumper 0805
4447	4822 051 20008	0R Jumper 0805
4448	4822 051 20008	0R Jumper 0805
4449	4822 051 20008	0R Jumper 0805
4450	4822 051 20008	0R Jumper 0805
4451	4822 051 20008	0R Jumper 0805
4452	4822 051 20008	0R Jumper 0805
4453	4822 051 20008	0R Jumper 0805
4454	4822 051 20008	0R Jumper 0805
4455	4822 051 20008	0R Jumper 0805
4456	4822 051 20008	0R Jumper 0805
4457	4822 051 20008	0R Jumper 0805
4458	4822 051 20008	0R Jumper 0805
4459	4822 051 20008	0R Jumper 0805
4460	4822 051 20008	0R Jumper 0805
4461	4822 051 20008	0R Jumper 0805
4462	4822 051 20008	0R Jumper 0805
4463	4822 051 20008	0R Jumper 0805
4464	4822 051 20008	0R Jumper 0805
4465	4822 051 20008	0R Jumper 0805
4466	4822 051 20008	0R Jumper 0805
4467	4822 051 20008	0R Jumper 0805
4468	4822 051 20008	0R Jumper 0805
4469	4822 051 20008	0R Jumper 0805
4471	4822 051 20008	0R Jumper 0805
4473	4822 051 20008	0R Jumper 0805
4474	4822 051 20008	0R Jumper 0805
4475	4822 051 20008	0R Jumper 0805
4476	4822 051 20008	0R Jumper 0805
4477	4822 051 20008	0R Jumper 0805
4478	4822 051 20008	0R Jumper 0805
4479	4822 051 20008	0R Jumper 0805
4480	4822 051 20008	0R Jumper 0805
4481	4822 051 20008	0R Jumper 0805
4482	4822 051 20008	0R Jumper 0805
4484	4822 051 20008	0R Jumper 0805
4485	4822 051 20008	0R Jumper 0805
4490	4822 051 20008	0R Jumper 0805
4492	4822 051 20008	0R Jumper 0805
4493	4822 051 20008	0R Jumper 0805
4494	4822 051 20008	0R Jumper 0805
4495	4822 051 20008	0R Jumper 0805
4496	4822 051 20008	0R Jumper 0805
4497	4822 051 20008	0R Jumper 0805
4600	4822 051 20008	0R Jumper 0805
4601	4822 051 20008	0R Jumper 0805
4602	4822 051 20008	0R Jumper 0805
4603	4822 051 20008	0R Jumper 0805
4800	4822 051 20008	0R Jumper 0805
4803	4822 051 20008	0R Jumper 0805
4806	4822 051 20008	0R Jumper 0805
4808	4822 051 20008	0R Jumper 0805
4809	4822 051 20008	0R Jumper 0805
4810	4822 051 20008	0R Jumper 0805
4812	4822 051 20008	0R Jumper 0805
4813	4822 051 20008	0R Jumper 0805
4814	4822 051 20008	0R Jumper 0805
4816	4822 051 20008	0R Jumper 0805
4817	4822 051 20008	0R Jumper 0805
4821	4822 051 20008	0R Jumper 0805
4822	4822 051 20008	0R Jumper 0805
4824	4822 051 20008	0R Jumper 0805
4825	4822 051 20008	0R Jumper 0805
4826	4822 051 20008	0R Jumper 0805
4829	4822 051 20008	0R Jumper 0805
4830	4822 051 20008	0R Jumper 0805
4832	4822 051 20008	0R Jumper 0805
4833	4822 051 20008	0R Jumper 0805
4835	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5400	4822 157 62552	Coil 2,2µH 5%
5401	4822 157 62552	Coil 2,2µH 5%
5402	4822 157 62552	Coil 2,2µH 5%
5801	4822 157 62552	Coil 2,2µH 5%

DIODES

6400	4822 130 31878	1N4003G
6402	4822 130 10792	LTL-1CHPE
6403	4822 130 10792	LTL-1CHPE
6404	4822 130 10792	LTL-1CHPE
6405	4822 130 10792	LTL-1CHPE
6461	4822 130 30621	1N4148
6462	4822 130 30621	1N4148
6463	4822 130 30621	1N4148
6464	4822 130 30621	1N4148
6465	4822 130 30621	1N4148
6466	4822 130 30621	1N4148
6467	4822 130 30621	1N4148
6468	4822 130 30621	1N4148
6469	4822 130 30621	1N4148
6470	4822 130 30621	1N4148
6471	4822 130 30621	1N4148
6472	4822 130 30621	1N4148
6473	4822 130 30621	1N4148

ELECTRICAL PARTS LIST - FRONT BOARD

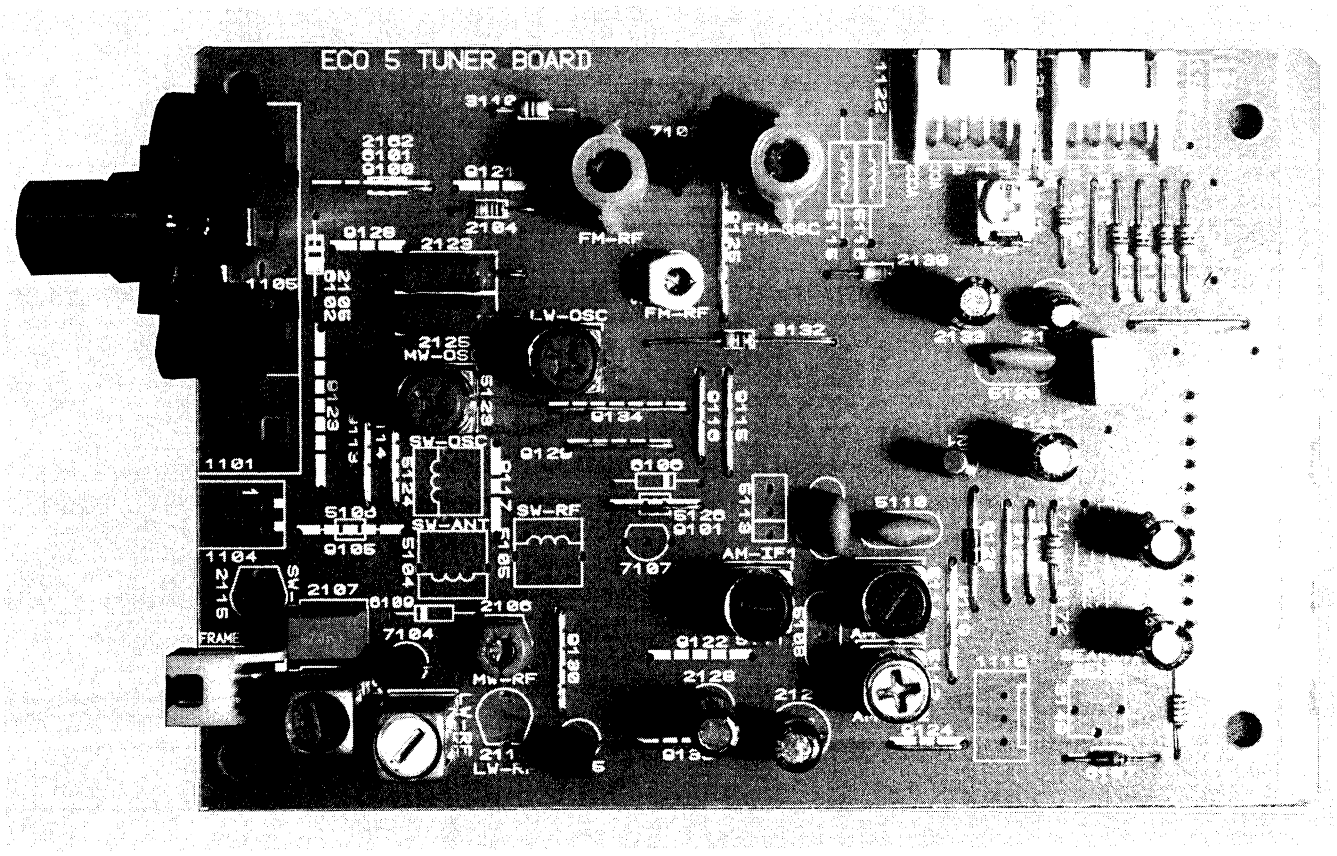
DIODES

6474	4822 130 30621	1N4148
6475	4822 130 30621	1N4148
6476	4822 130 30621	1N4148
6477	4822 130 30621	1N4148
6479	4822 130 30621	1N4148
6481	4822 130 30621	1N4148
6484	4822 130 30621	1N4148
6485	4822 130 31878	1N4003G
6486	4822 130 30621	1N4148
6487	4822 130 30621	1N4148
6500	4822 130 10791	LTL-1CHGE
6501	4822 130 10791	LTL-1CHGE
6502	4822 130 10791	LTL-1CHGE
6520	4822 130 10792	LTL-1CHPE

TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 17346	TMP87CS71F - '545S51851'
7402	4822 209 31508	ST24C01B6
7403	4822 209 31981	SAA6579T
7404	4822 130 10165	GP1U28XP
7405	4822 209 15449	74HC4094D
7420	4822 130 60511	BC847B
7421	4822 130 60511	BC847B
7422	4822 130 60511	BC847B
7425	4822 130 60511	BC847B
7426	4822 130 60511	BC847B
7427	4822 130 60511	BC847B
7805	4822 130 60511	BC847B
7806	4822 130 60511	BC847B

Note : Only the parts mentioned in this list are normal service spare parts.



ECO 5 TUNER BOARD

TUNER BOARD ECO5

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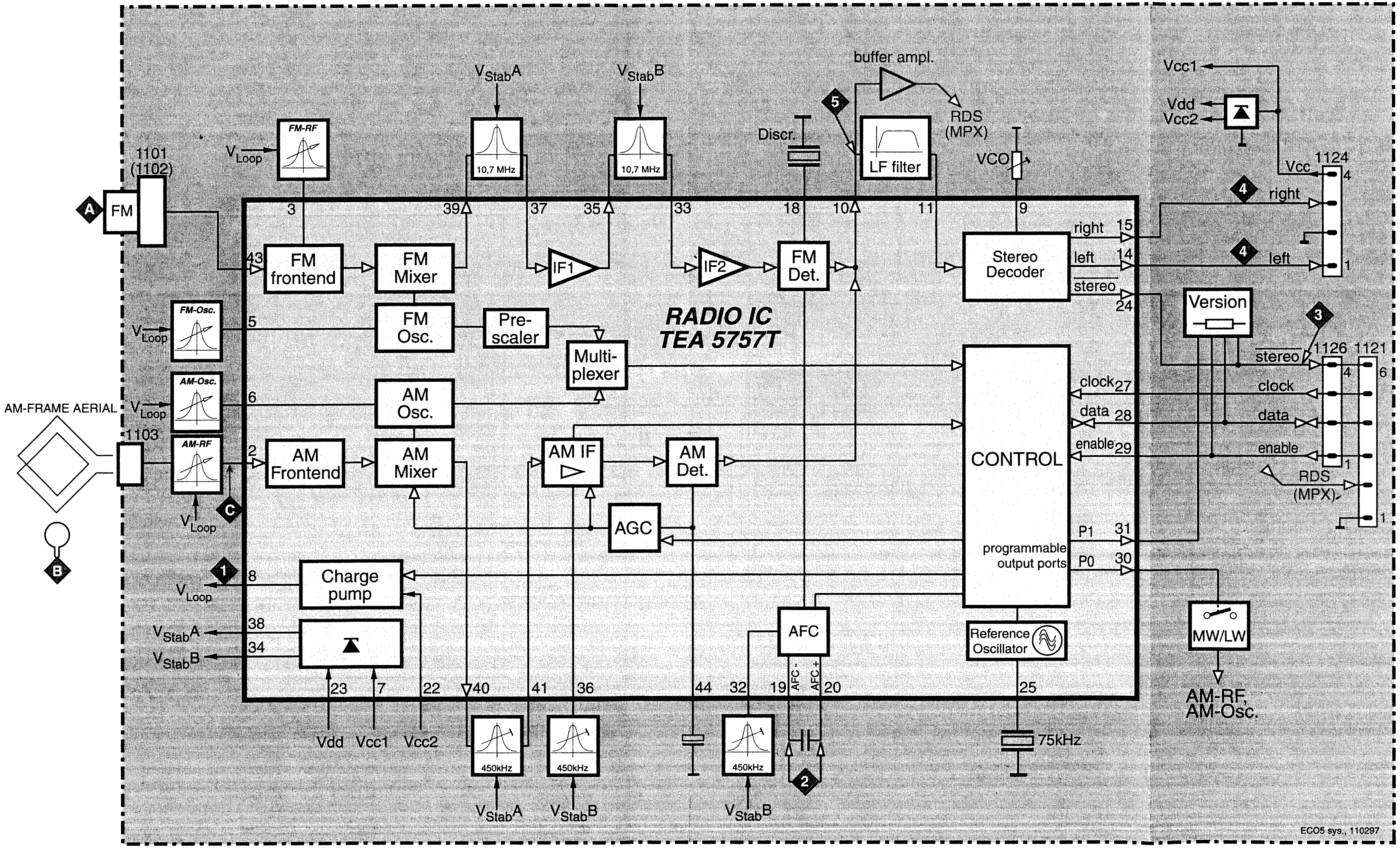
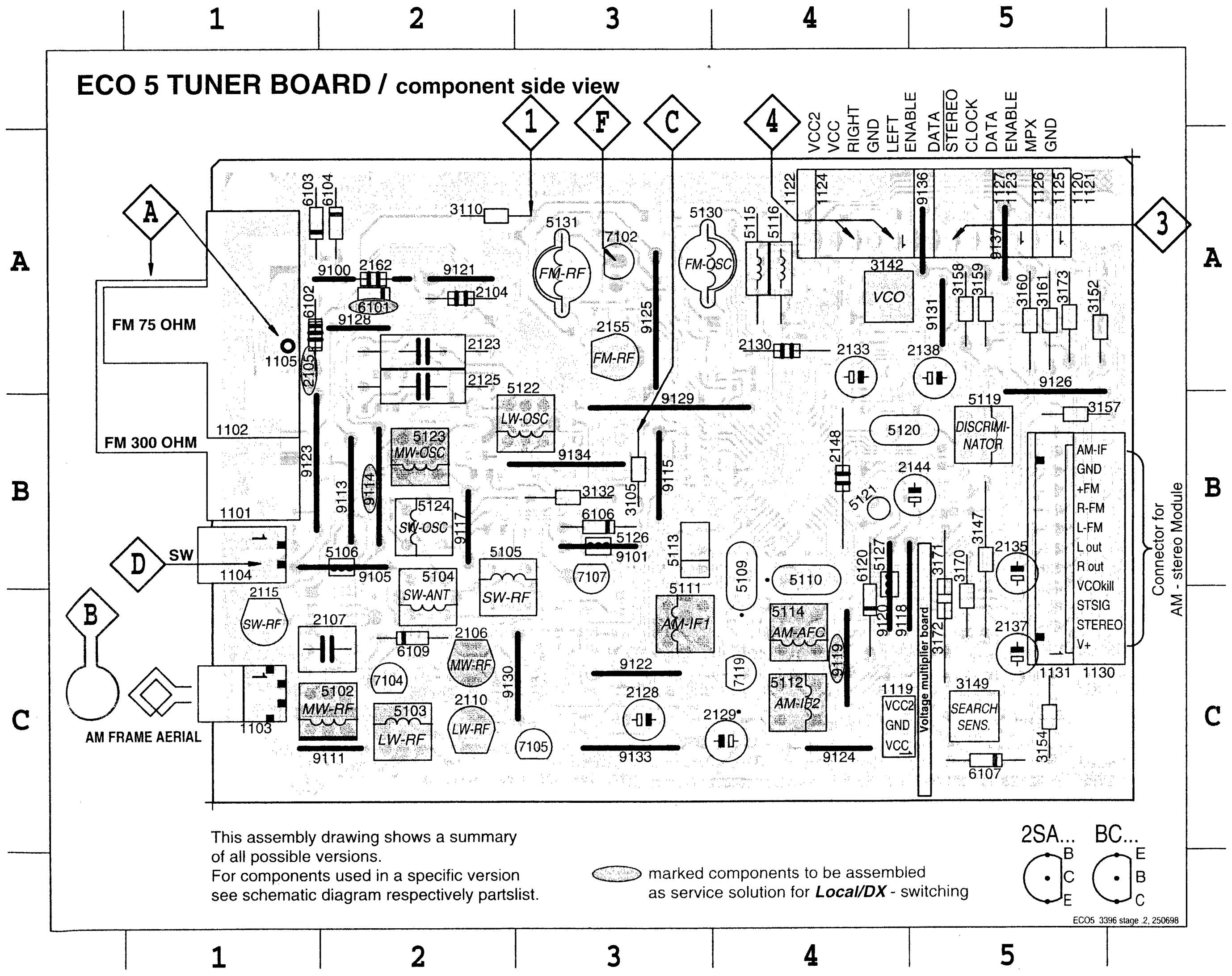
BLOCKDIAGRAM

TUNER BOARD
ECO 5 systems


RADIO IC
TEA 5757T
FM
1101
(1102)
A
B
C
1
2
3
4
5
AM-FRAME AERIAL
1103
FM-RF
FM-Osc.
AM-Osc.
AM-RF
V_Loop
V_StabA
V_StabB
10,7 MHz
450kHz
FM frontend
FM Mixer
FM Osc.
Pre-scaler
Multi-plexer
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
IF1
IF2
FM Det.
Discr.
buffer ampl.
RDS (MPX)
LF filter
VCO
Stereo Decoder
right
left
stereo
CONTROL
clock
data
enable
programmable output ports
P1
P0
Charge pump
AFC
AFC -
AFC +
Reference Oscillator
75kHz
Vdd
Vcc1
Vcc2
Vcc
1124
Version
1126
1121
MW/LW
AM-RF, AM-Osc.
3
39
37
35
33
18
10
11
9
43
5
6
2
8
38
34
23
7
22
40
41
36
44
32
19
20
25
15
14
24
27
28
29
31
30
ECO5 sys., 110297

1101 A1	2106 C2	2137 C5	3149 C5	3173 A5	5114 C4	5130 A3	7104 C2	9117 B2	9129 B3
1102 A1	2107 C2	2138 A5	3152 A5	5102 C2	5115 A4	5131 A3	7105 C3	9118 B4	9130 C3
1103 C1	2110 C2	2144 B5	3154 C5	5103 C2	5116 A4	6101 A2	7107 B3	9119 C4	9131 A5
1104 B1	2115 C1	2148 B4	3157 B5	5104 C2	5119 B5	6102 A1	7119 C4	9120 B4	9133 C3
1105 A1	2123 A2	2155 A3	3158 A5	5105 B2	5120 B4	6103 A1	9100 A2	9121 A2	9134 B3
1119 C5	2125 A2	2162 A2	3159 A5	5106 B2	5121 B4	6104 A2	9101 B3	9122 C3	9136 A5
1120 A5	2128 C3	3105 B3	3160 A5	5109 B4	5122 B3	6106 B3	9105 B2	9123 B1	9137 A5
1130 B5	2129 C4	3110 A2	3161 A5	5110 B4	5123 B2	6107 C5	9111 C2	9124 C4	
1131 B5	2130 A4	3132 B3	3170 C5	5111 C3	5124 B2	6109 C2	9113 B2	9125 A3	
2104 A2	2133 A4	3142 A4	3171 C5	5112 C4	5126 B3	6120 C4	9114 B2	9126 B5	
2105 A1	2135 B5	3147 B5	3172 C5	5113 B3	5127 B4	7102 A3	9115 B3	9128 A2	

ECO 5 TUNER BOARD / component side view

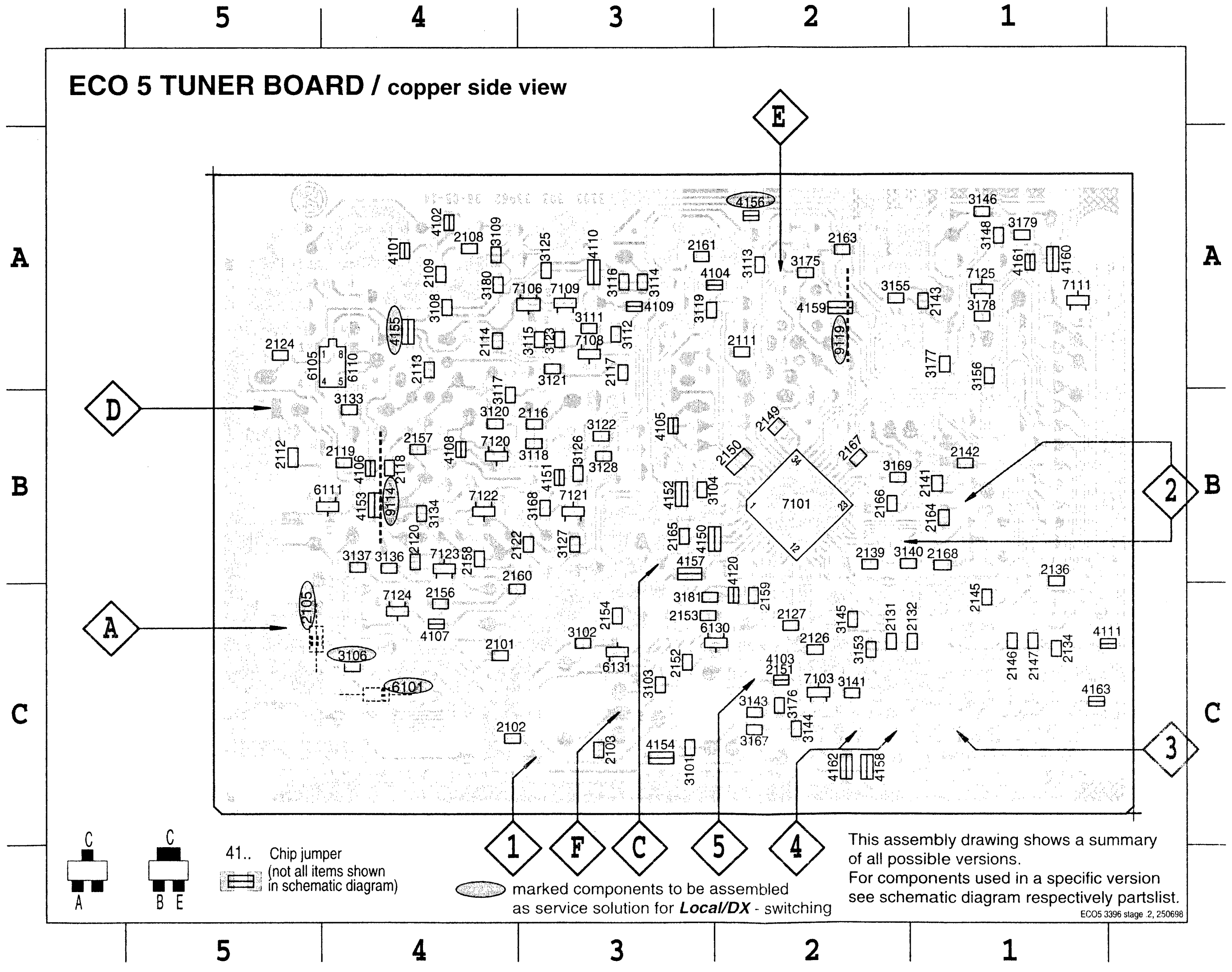

1
2
3
4
5
A
B
C
1
F
C
4
3
A
D
B
VCC2
VCC
RIGHT
GND
LEFT
ENABLE
DATA
STEREO
CLOCK
DATA
ENABLE
MPX
GND
FM 75 OHM
FM 300 OHM
SW
AM FRAME AERIAL
FM-RF
FM-OSC
VCO
LW-OSC
MW-OSC
SW-OSC
SW-ANT
SW-RF
MW-RF
LW-RF
AM-IF1
AM-AFC
AM-IF2
DISCRIMI-NATOR
SEARCH SENS.
Voltage multiplier board
VCC2
GND
VCC
AM-IF
GND
+FM
R-FM
L-FM
L out
R out
VCOkill
STSIG
STEREO
V+
Connector for AM - stereo Module
2SA...
BC...
B
C
E
E
B
C
ECO5 3396 stage .2, 250698

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

marked components to be assembled
as service solution for ***Local/DX*** - switching

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120 B4
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121 B3
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122 B4
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123 B4
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124 C4
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125 A1
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2	
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3	
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3	
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3	
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1	

ECO 5 TUNER BOARD / copper side view


5
4
3
2
1
A
B
C
E
D
A
2
3
1
F
C
5
4
7101
C
A
C
B E
41..
ECO5 3396 stage .2, 250698

Chip jumper
(not all items shown
in schematic diagram)

marked components to be assembled
as service solution for ***Local/DX*** - switching

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

TUNER ADJ

Waverang
VARICAP ALIC
FM 87.5 - 108MH (65.81 - 74, 87.5 - 108
MW FM/AM-version, 10kHz 530 - 1700kH
FM/MW-version, 9kHz 531 - 1602kH
LW 153 - 279kHz
MW FM/MW/LW- version, 9k 531 - 1602kHz
FM IF
FM
FM RF
FM 87.5 - 108MH (65.81 - 74, 87.5 - 108
VCO
FM
AM IF
MW
AM AFC **MW**
AM RF 3)
MW 4) FM/MW/LW- and FM/MW- (9kHz grid) 531 - 1602kHz
LW
MW FM/AM-version, 10kHz 530 - 1700kHz

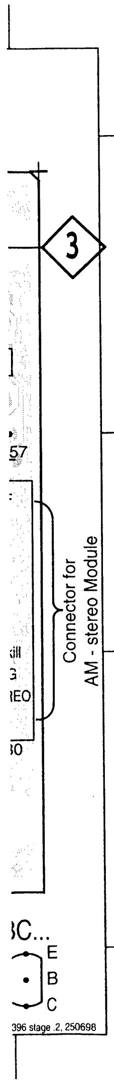
Use service test prog

1) If sensitivity of freq
(input signal: stere

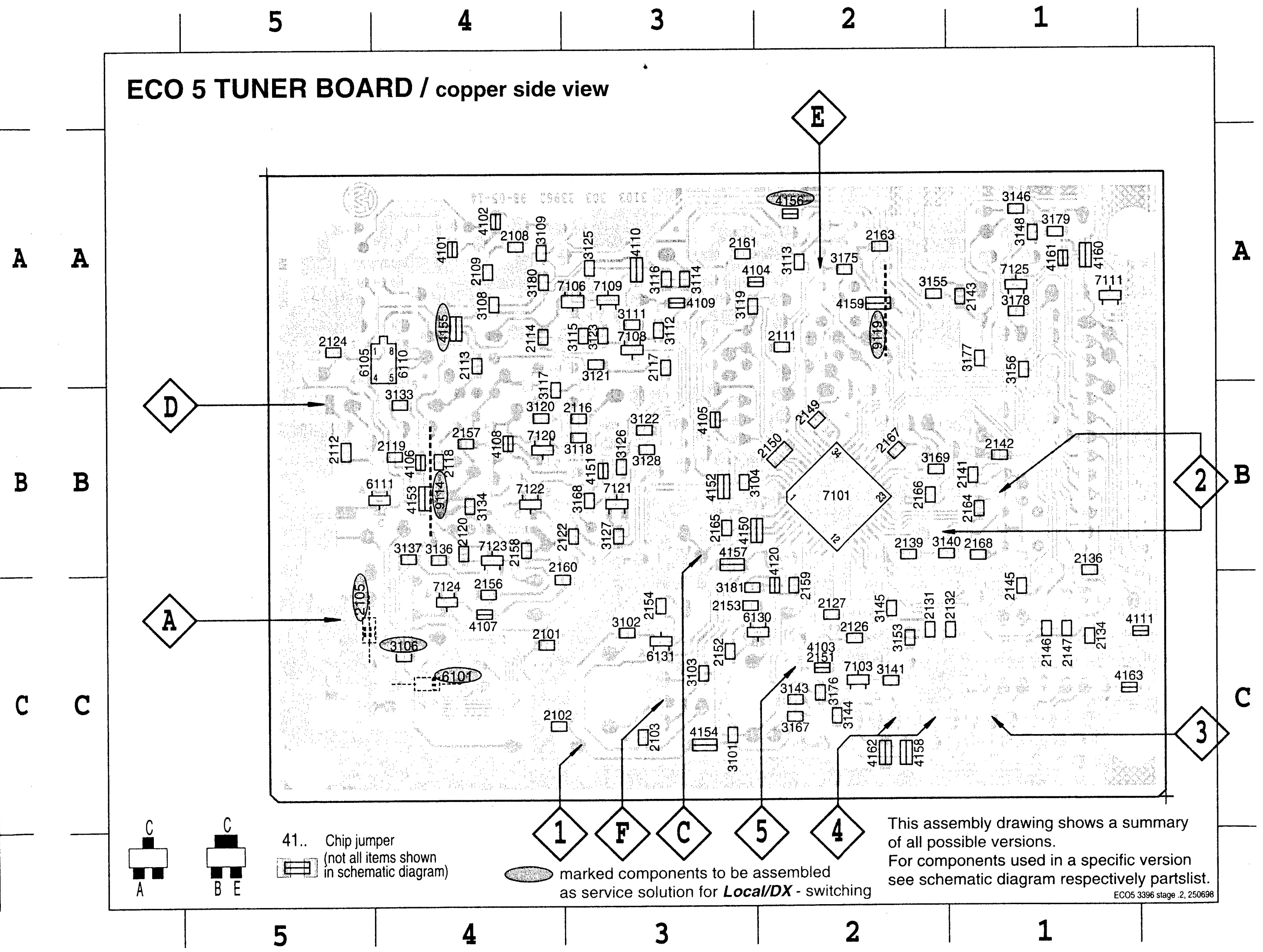
3) For AM RF adjustm

↕ Repeat

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120 B4	
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121 B3	
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122 B4	
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123 B4	
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124 C4	
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125 A1	
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2		
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3		
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3		
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3		
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1		



ECO 5 TUNER BOARD / copper side view



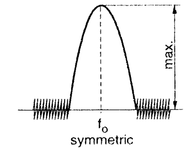
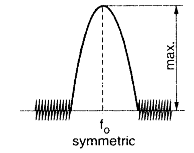
Chip jumper
(not all items shown in schematic diagram)

marked components to be assembled as service solution for ***Local/DX*** - switching

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

ECO5 3396 stage .2, 250698

TUNER ADJUSTMENT TABLE (**ECO5** FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F	IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V_{RF} = 3mV	IC 7101 36 100nF 220R	5111	4	 max. f_o symmetric
			IC 7101 40 100nF 220R see remark [2]	5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF [3]						
MW [4] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	4	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO5, discr. coil, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

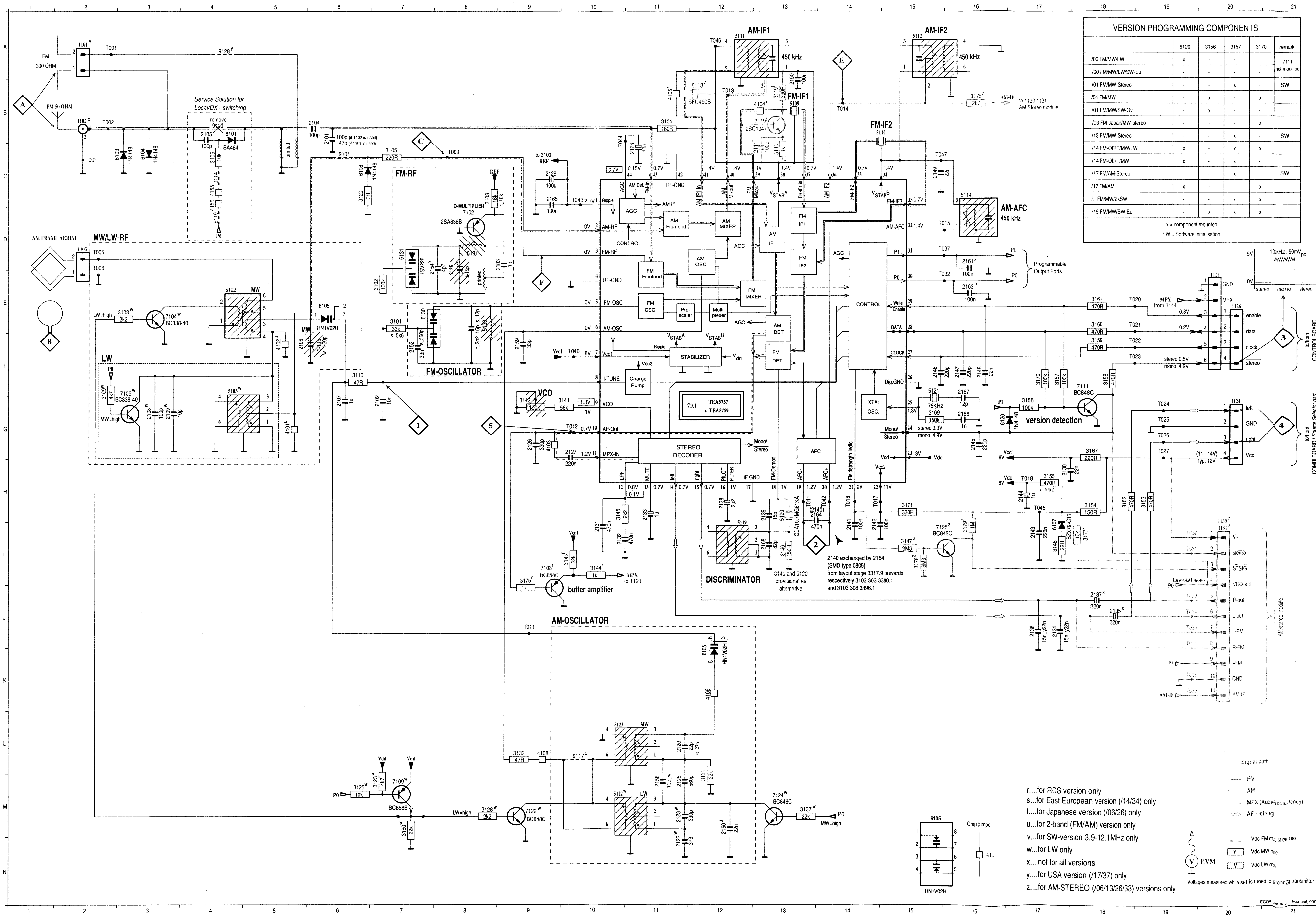
[2] RC network serves for damping the IF-filter while adjusting the other one

[3] For AM RF adjustments the original frame antenna has to be used !

[4] MW has to be aligned before LW.

↕ Repeat

TUNER BOARD ECO5 / Systems


FM 300 OHM
FM 50 OHM
AM FRAME AERIAL
MW/LW-RF
LW
Service Solution for Local/DX - switching
remove 9100
FM-RF
Q-MULTIPLIER 7102 2SA838B
FM-OSCILLATOR
VCO
AM-IF1
450 kHz
FM-IF1
AM-IF2
450 kHz
FM-IF2
AM-AFC 450 kHz
to 1130,1131 AM Stereo module
AGC
AM Frontend
AM MIXER
CONTROL
FM Frontend
AM OSC
AM IF
FM IF1
FM IF2
FM MIXER
FM OSC
Pre-scaler
Multi-plexer
AM DET
FM DET
STABILIZER
Charge Pump
7101 TEA5757 z_TEA5759
STEREO DECODER
AFC
XTAL OSC.
CONTROL
Programmable Output Ports
version detection
to/from CONTROL BOARD
to/from COMBI BOARD / Source Selector part
AM-stereo module
DISCRIMINATOR
2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1
3140 and 5120 provisional as alternative
buffer amplifier
AM-OSCILLATOR
HN1V02H
Chip jumper
150kHz, 50mVpp
stereo mono stereo
EVM
ECO5 systems - discr.coil, 030998

VERSION PROGRAMMING COMPONENTS

	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

Signal path
- FM
- AM
- MPX (Audiofrequency)
- AF - left/right

- Vdc FM mode stereo
- Vdc MW mode
- Vdc LW mode

Voltages measured while set is tuned to strong transmitter

1101	A 1
1102	B 2
1103	D 2
1121	E20
1124	G20
1126	E20
1130	I20
1131	I20
2101	C 6
2102	G 7
2103	D 9
2104	B 6
2106	F 5
2107	G 6
2108	G 3
2109	G 3
2111	C13
2120	L11
2122	N11
2123	M11
2125	M11
2126	G 9
2127	G10
2128	C11
2129	C 9
2130	H17
2131	I10
2132	I10
2133	H11
2134	J17
2135	J18
2136	J17
2137	J18
2138	H12
2139	H13
2140	H14
2141	H14
2142	H14
2143	I17
2144	H17
2145	G16
2146	F15
2147	F16
2148	F16
2149	C15
2150	B13
2152	F 7
2153	E 8
2154	E 7
2155	D 8
2158	M11
2159	F 9
2160	M12
2161	D16
2163	E16
2164	H14
2165	C 9
2166	G16
2167	F16
2168	I 13
3101	E 7
3102	E 7
3103	C 8
3104	B11
3105	C 7
3108	E 3
3109	F 2
3110	F 6
3113	C13
3119	B13
3120	C 6
3123	M 7
3125	M 6
3128	M 8
3132	L 9
3134	M12
3137	M13
3140	I13
3141	G10
3142	G 9
3143	I10
3144	I10
3145	H10
3146	I17
3147	I15
3152	H18
3153	H19
3154	H18
3155	H17
3156	G17
3157	F17
3158	F18
3159	F18
3160	E18
3161	E18
3167	G18
3169	G15
3170	F17
3171	H15
3175	B16
3176	J 9
3177	I18
3178	I15
3179	I16
3180	M7
4101	G 5
4102	F 5
4103	G 9
4104	B13
4105	B11
4106	K12
4108	L 9
5102	E 4
5103	F 4
5109	B13
5110	B14
5111	A13
5112	A15
5113	B12
5114	C16
5119	I 12
5120	H13
5121	F15
5122	M11
5123	L11
5130	E 8
5131	D 8
6103	C 2
6104	C 3
6105	K12
6105	E 6
6106	C 6
6107	H17
6120	G16
6130	E 7
6131	D 7
7101	G11
7102	D 8
7103	I 9
7104	E 3
7105	F 2
7109	M 7
7111	F18
7119	B13
7122	M 9
7124	M13
7125	I16
9100	B 4
9101	C 6
9117	L10
9128	A 4

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	4822 122 32139	12pF 2% 63V	for East. Europe
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	for LW version
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20223	22k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0.1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	
3176	4822 051 10102	1k 2% 0,25W	for RDS version
3180	4822 051 20223	22k 5% 0,1W	for LW version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

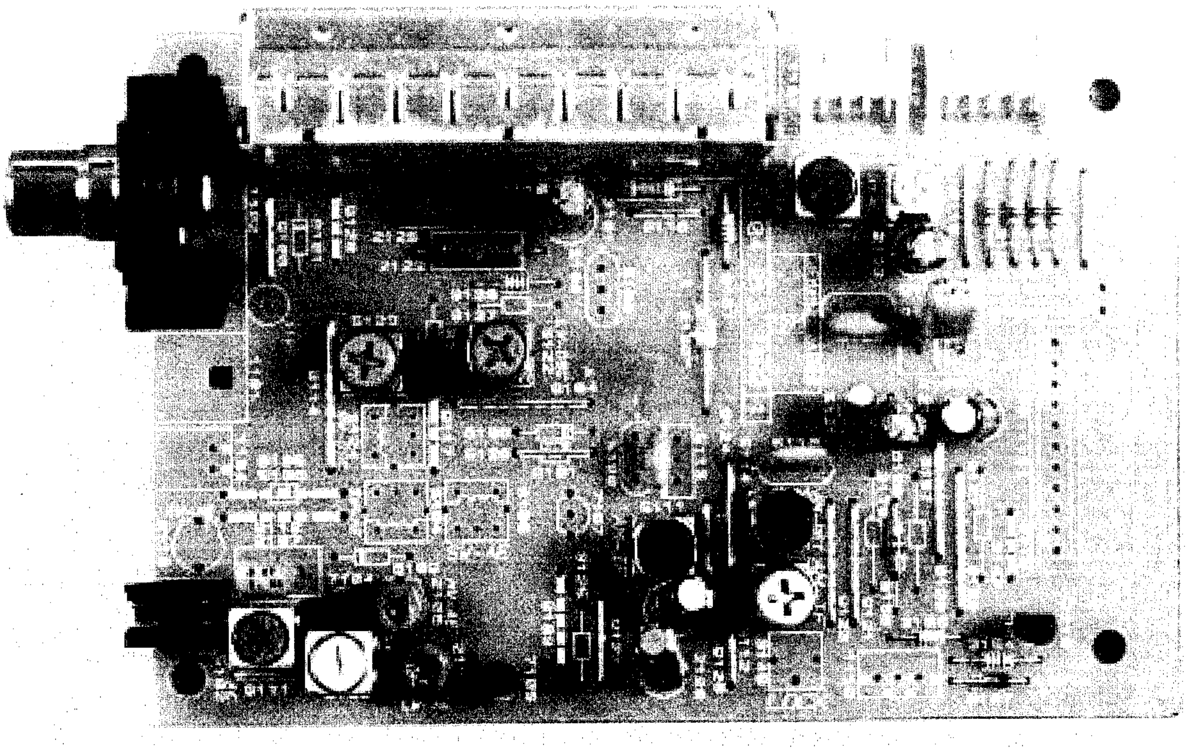
DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

Note: Only the parts mentioned in this list are normal service spare parts.



TUNER 95 BOARD

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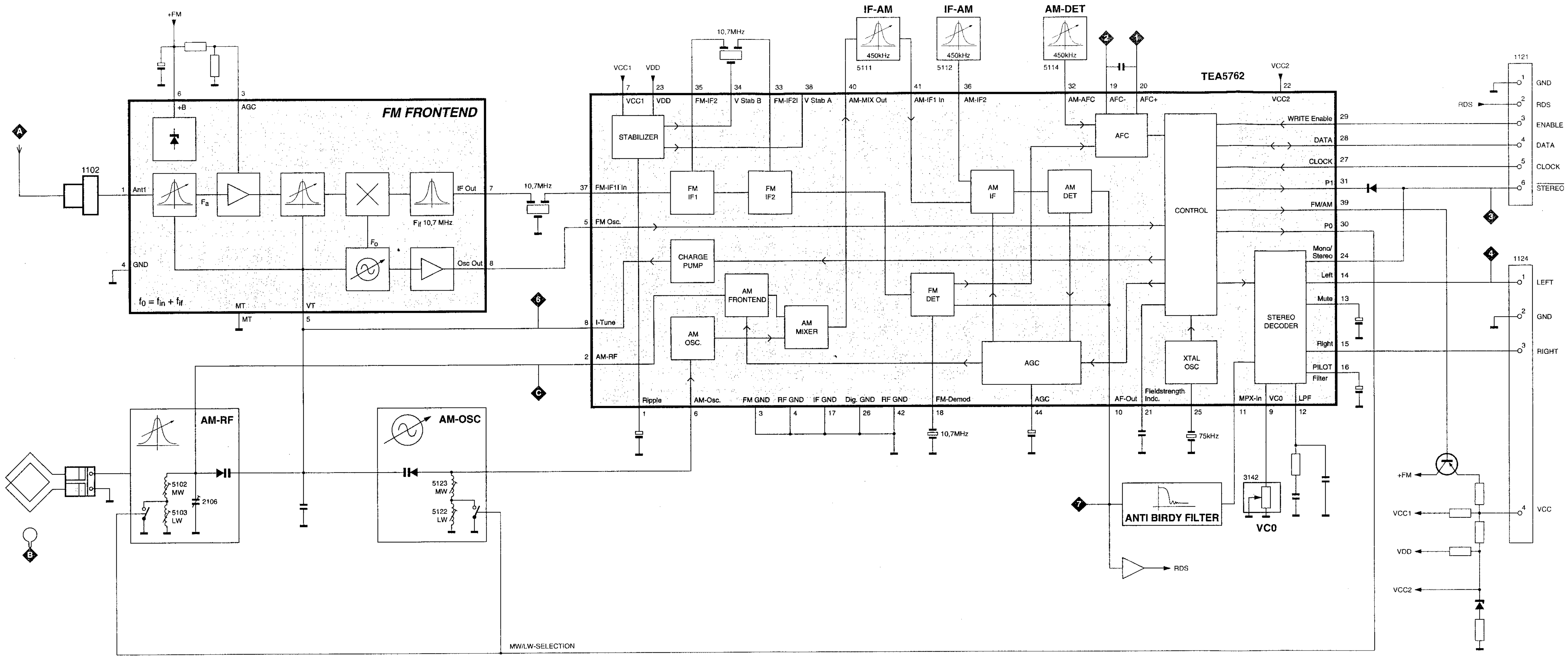
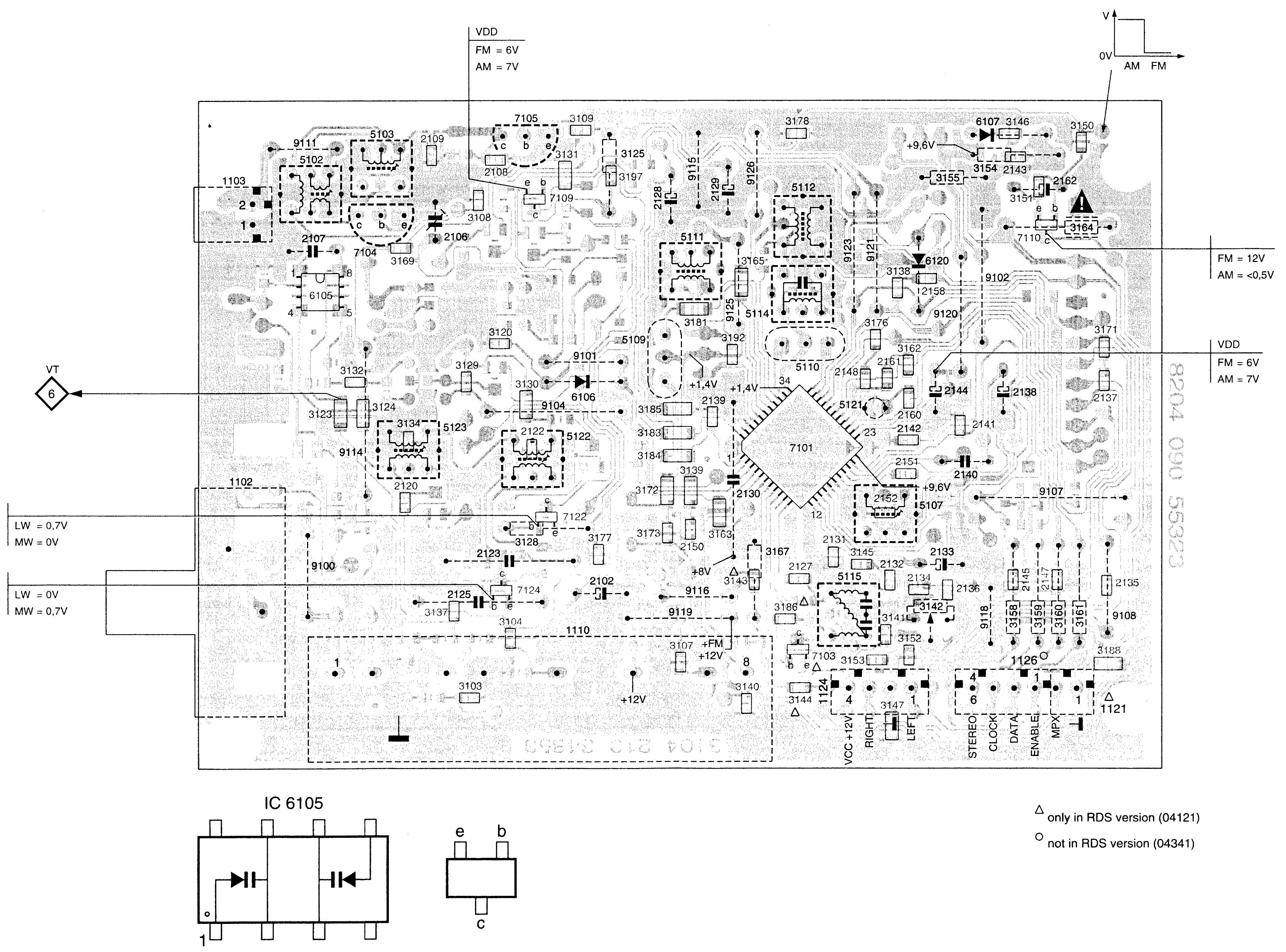
Partslist 7D-4

BLOCKDIAGRAM


FM FRONTEND
+FM
+B
AGC
Ant1
GND
1102
Fa
IF Out
Fif 10,7 MHz
Fo
Osc Out
f0 = fin + fif
MT
VT
10,7MHz
IF-AM
IF-AM
AM-DET
450kHz
5111
5112
5114
TEA5762
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
FM-IF1I In
FM Osc.
FM IF1
FM IF2
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
AM IF
AM DET
FM DET
AGC
AFC
CONTROL
XTAL OSC
STEREO DECODER
I-Tune
AM-RF
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/ Stereo
Left
Mute
Right
PILOT Filter
75kHz
1121
GND
RDS
ENABLE
DATA
CLOCK
STEREO
1124
LEFT
GND
RIGHT
VCC
+FM
VCC1
VDD
VCC2
AM-RF
AM-OSC
5102 MW
5103 LW
2106
5123 MW
5122 LW
3142
ANTI BIRDY FILTER
VC0
RDS
MW/LW-SELECTION
A
B
C
2
3
4
6
7

1102	F4	2107	C4	2128	C7	2136	G10	2144	E10	2160	E9	3120	D6	3132	E5	3143	G8	3153	G9	3163	F8	3176	D9	3188	G11	5111	C8	6106	E7	7110	D11	9108	G11	9121	D9
1103	C4	2108	C6	2129	C8	2137	E11	2145	G11	2161	E9	3123	E4	3134	E5	3144	H9	3154	C10	3164	C11	3177	F7	3192	D8	5112	C9	6107	B10	7122	F7	9111	C4	9123	D9
1110	G7	2109	C5	2130	F8	2138	E10	2147	G11	2162	C11	3124	E5	3137	G5	3145	F9	3155	C10	3165	D8	3178	B8	3197	C7	5114	D8	6120	D10	7124	G6	9114	E5	9125	D8
1121	H11	2120	F5	2131	F9	2139	E8	2148	E9	3103	H6	3125	C7	3138	D9	3146	B10	3158	G11	3167	F8	3181	D8	5102	C4	5115	G9	7101	E9	9100	F4	9115	C8	9126	C8
1124	H9	2122	E6	2132	F9	2140	F10	2150	F8	3104	G6	3128	F6	3139	F8	3147	H9	3159	G11	3169	D5	3183	E7	5103	C5	5121	E9	7103	G9	9101	E7	9116	G8		
1126	G10	2123	F6	2133	F10	2141	E10	2151	F9	3107	G7	3129	E6	3140	H8	3150	C11	3160	G11	3171	D11	3184	E7	5107	F10	5122	E7	7104	D5	9102	D10	9118	G10		
2102	G7	2125	G6	2134	G10	2142	E9	2152	F9	3108	C6	3130	E6	3141	G9	3151	C10	3161	G11	3172	F7	3185	E7	5109	D7	5123	E5	7105	B6	9104	E6	9119	G7		
2106	C5	2127	F9	2135	G11	2143	C10	2158	D10	3109	B7	3131	C6	3142	G10	3152	G9	3162	D9	3173	F7	3186	G8	5110	E9	6105	D4	7109	C6	9107	F11	9120	D10		

TUNER 95 bis Combi: Copper side view


VDD
FM = 6V
AM = 7V
V
0V
AM
FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
VCC +12V
RIGHT
LEFT
STEREO
CLOCK
DATA
ENABLE
MPX
+9,6V
+1,4V
+8V
+FM
+12V
7101
6105
IC 6105
e
b
c
3104 213 31860
8204 090 55323

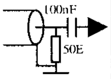
△ only in RDS version (04121)

○ not in RDS version (04341)

TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

LEU0149
9813

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check	◇6	7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123		8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check		1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 MHz 1mV continuous wave ***short pin 21 (IC7101) to ground***	◇A	98 MHz	5107	◇1 ◇2	0mV ± 3mV
FM – VCO						
FM	98 MHz 1 mV continuous wave	◇A	98 MHz	3142	◇3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	◇A	98MHz	mixcoil inside Tuner 1110	◇4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	 ◇C	MW	5111	◇7	symmetrical and max. height ↕
				5112		
	450kHz continuous wave			5114	◇1 ◇2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	◇B	558kHz	5102	◇7	MAX
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM	*	198kHz	5103		MAX

adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

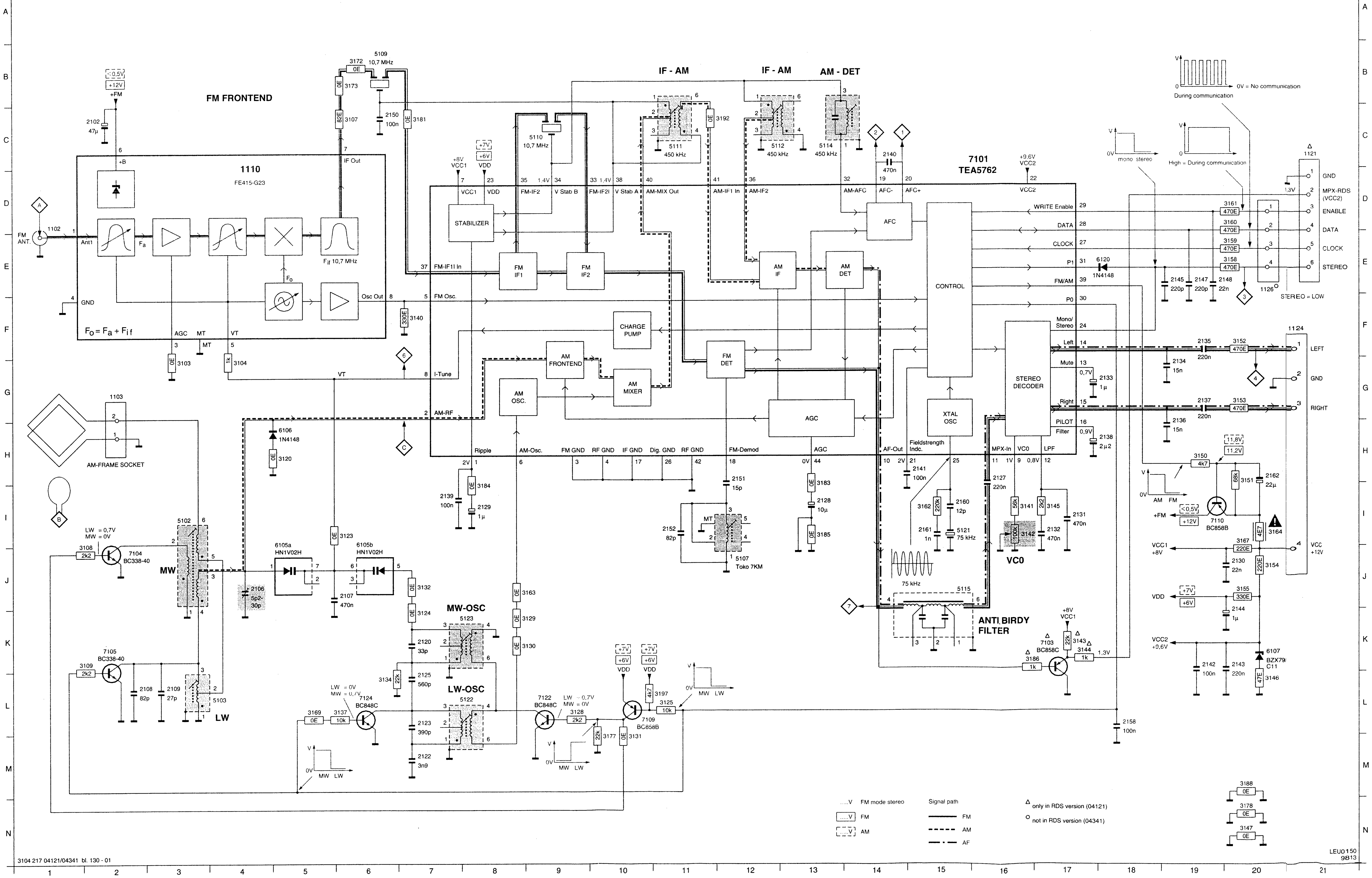
↕ repeat

1102	D1	1124	F21	2107	J6	2122	M7	2128	I13	2132	I17	2136	H19	2140	C14	2144	K20	2150	C6	2160	I15
1103	G2	1126	E20	2108	L2	2123	L7	2129	I8	2133	G18	2137	G19	2141	H15	2145	E19	2151	H12	2161	I15
1110	D4	2102	C2	2109	L3	2125	L7	2130	J20	2134	G19	2138	H18	2142	K19	2147	E19	2152	I11	2162	H20
1121	C21	2106	J4	2120	K7	2127	H16	2131	I17	2135	F19	2139	I7	2143	K20	2148	E19	2158	L18	3103	G3

3104	G4	3120	H5	3128	L9	3132	J7	3141	I16	3145	I17	3151	I20	3155	J20	3161	D19	3167	I20	3177	M10
3107	C6	3123	I6	3129	K8	3134	L6	3142	I16	3146	L20	3152	F20	3158	E19	3162	I15	3169	L5	3178	N20
3108	J1	3124	K7	3130	K8	3137	L5	3143	K17	3147	N20	3153	G20	3159	E19	3163	J8	3172	B6	3181	C7
3109	K1	3125	L11	3131	M10	3140	F7	3144	K17	3150	H19	3154	J20	3160	D19	3164	I20	3173	B6	3183	I13

3184	I8	3192	C12	5107	J12	5112	C12	5122	L7	6106	H5	7103	K17	7110	I19						
3185	I13	3197	L11	5109	B6	5114	C13	5123	K7	6107	K20	7104	J2	7122	L9						
3186	K16	5102	I3	5110	C9	5115	J15	6105a	I5	6120	E17	7105	K2	7124	L6						
3188	M20	5103	L4	5111	C11	5121	I15	6105b	I6	7101	C15	7109	L10								

TUNER 95 bis


FM FRONTEND
<0,5V
+12V
+FM
2102 47µ
1110
FE415-G23
+B
IF Out
FM ANT.
1102
Ant1
Fa
Fif 10,7 MHz
Fo
GND
Osc Out
Fo = Fa + Fif
AGC
MT
VT
3103 0E
3104 1k
3172 0E
5109 10,7 MHz
3173 0E
3107 82E
2150 100n
3181 0E
3140 330E
IF - AM
IF - AM
AM - DET
5110 10,7 MHz
5111 450 kHz
5112 450 kHz
5114 450 kHz
3192 0E
2140 470n
7101
TEA5762
+8V VCC1
+7V
+6V
VDD
+9,6V VCC2
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
FM-IF1I In
FM IF1
FM IF2
AM IF
AM DET
AFC
CONTROL
FM Osc.
CHARGE PUMP
I-Tune
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
AM-RF
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VC0
LPF
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/ Stereo
Left
Mute
Right
PILOT Filter
6120 1N4148
2145 220p
2147 220p
2148 22n
3161 470E
3160 470E
3159 470E
3158 470E
1126
1121
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
1,3V
STEREO = LOW
0V = No communication
During communication
High = During communication
mono stereo
1124
LEFT
GND
RIGHT
2135 220n
3152 470E
2134 15n
2133 1µ
2137 220n
3153 470E
2136 15n
2138 2µ2
1103
AM-FRAME SOCKET
LW = 0,7V
MW = 0V
3108 2k2
7104 BC338-40
MW
5102
7105 BC338-40
3109 2k2
2108 82p
2109 27p
5103
LW
6106 1N4148
3120 0E
2106 5p2-30p
6105a HN1V02H
6105b HN1V02H
3123 0E
2107 470n
3132 0E
3124 0E
MW-OSC
5123
2120 33p
3134 22k
2125 560p
LW-OSC
5122
2123 390p
2122 3n9
LW = 0V
MW = 0,7V
7124 BC848C
3169 0E
3137 10k
MW LW
2139 100n
3184 0E
2129 1µ
3163 0E
3129 0E
3130 0E
7122 BC848C
LW = 0,7V
MW = 0V
3128 2k2
3177 22k
3131 0E
7109 BC858B
3197 4k7
3125 10k
2151 15p
2152 82p
MT
5107 Toko 7KM
3183 0E
2128 10µ
3185 0E
2141 100n
3162 220k
2160 12p
2161 1n
5121 75 kHz
75 kHz
5115
ANTI BIRDY FILTER
2127 220n
3141 56k
3142 100k
3145 2k2
2132 470n
2131 470n
VC0
+8V VCC1
7103 BC858C
3186 1k
3143 22k
3144 1k
1,3V
2158 100n
11,8V
11,2V
3150 4k7
3151 68k
2162 22µ
AM FM
+FM
7110 BC858B
3164 4E7
VCC1 +8V
3167 220E
2130 22n
3154 220E
VCC +12V
VDD
3155 330E
2144 1µ
VCC2 +9,6V
2142 100n
2143 220n
6107 BZX79/C11
3146 47E
3188 0E
3178 0E
3147 0E
LEU0150
9813

....V FM mode stereo

....V FM

....V AM

Signal path

FM

AM

AF

△ only in RDS version (04121)

○ not in RDS version (04341)

3104 217 04121/04341 bl. 130 - 01

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 50V
2123	4822 121 10766	390pF 1% 630V
2125	4822 121 10578	560pF 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2139	4822 126 10002	100nF 20% 25V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	15pF 5% 50V
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3120	4822 051 20008	0R Jumper 0805
3123	4822 051 10008	0R Jumper 1206
3124	4822 051 10008	0R Jumper 1206
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R Jumper 1206
3131	4822 051 10008	0R Jumper 1206
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R Jumper 1206
3140	4822 051 20331	330R 5% 0,1W
3141	4822 117 11148	56k 1% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3147	4822 051 10008	0R Jumper 1206
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 117 13579	220k 1% 0,1W
3163	4822 051 10008	0R Jumper 1206
3164	4822 052 10478 △	4R7 5% 0,33W
3165	4822 051 10008	0R Jumper 1206
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R Jumper 1206
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3178	4822 051 10008	0R Jumper 1206
3181	4822 051 10008	0R Jumper 1206
3183	4822 051 10008	0R Jumper 1206
3184	4822 051 10008	0R Jumper 1206
3185	4822 051 10008	0R Jumper 1206
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R Jumper 1206
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW Aerial
5103	4822 157 71635	LW Aerial

5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM_IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHZ
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

DIODES

6105	4822 130 83075	HN1V02H-B
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

Note : Only the parts mentioned in this list are normal service spare parts.

ETF6-FE TAPE MODULE

(Non-Dolby Version)

TABLE OF CONTENTS

Tape Module Wiring & variation table 9-1
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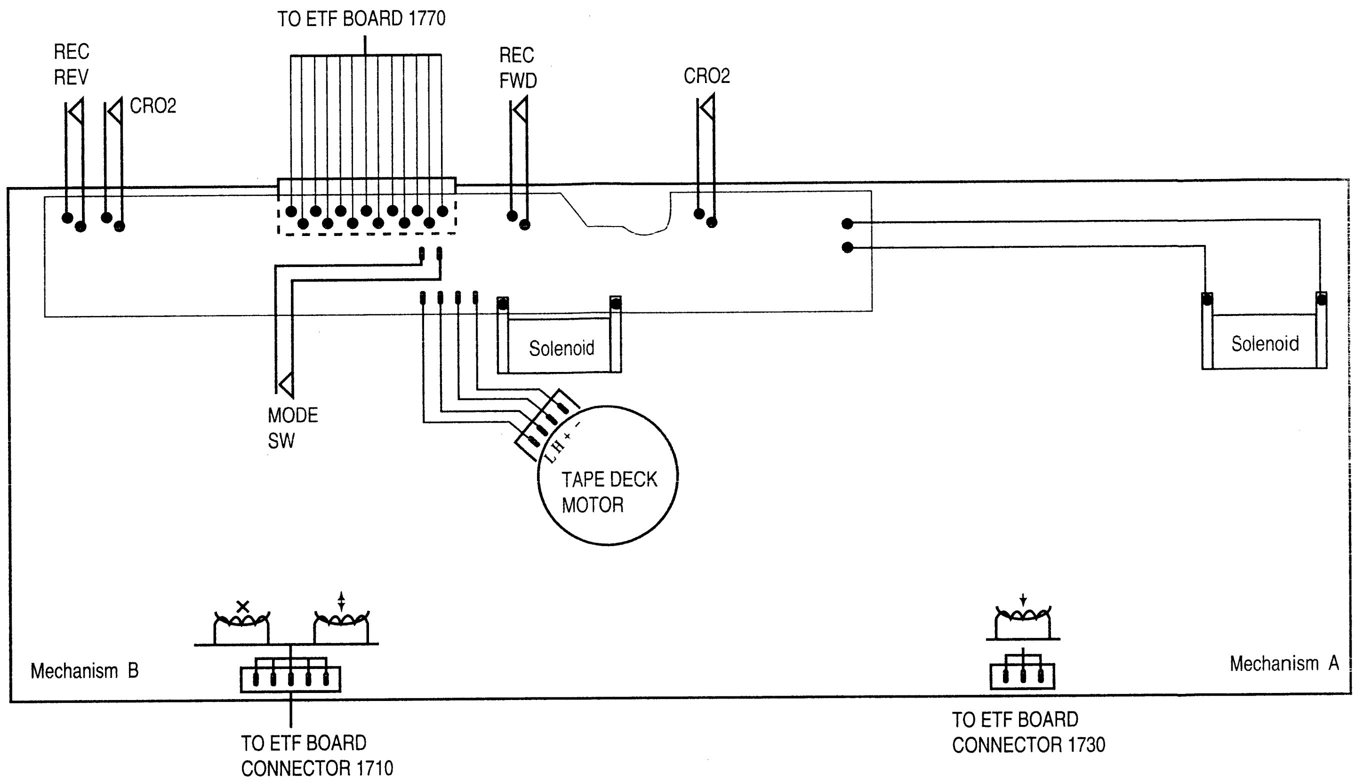
Servo Circuit diagram 9-8
Exploded views & parts list.. 9-9
Electrical parts list.. 9-13

Tapedeck wiring (Double deck)


TO ETF BOARD 1770
REC
REV
CRO2
REC
FWD
CRO2
Solenoid
Solenoid
MODE
SW
TAPE DECK
MOTOR
L R + -
Mechanism B
Mechanism A
TO ETF BOARD
CONNECTOR 1710
TO ETF BOARD
CONNECTOR 1730

OPTIONS / VARIANTS TABLE

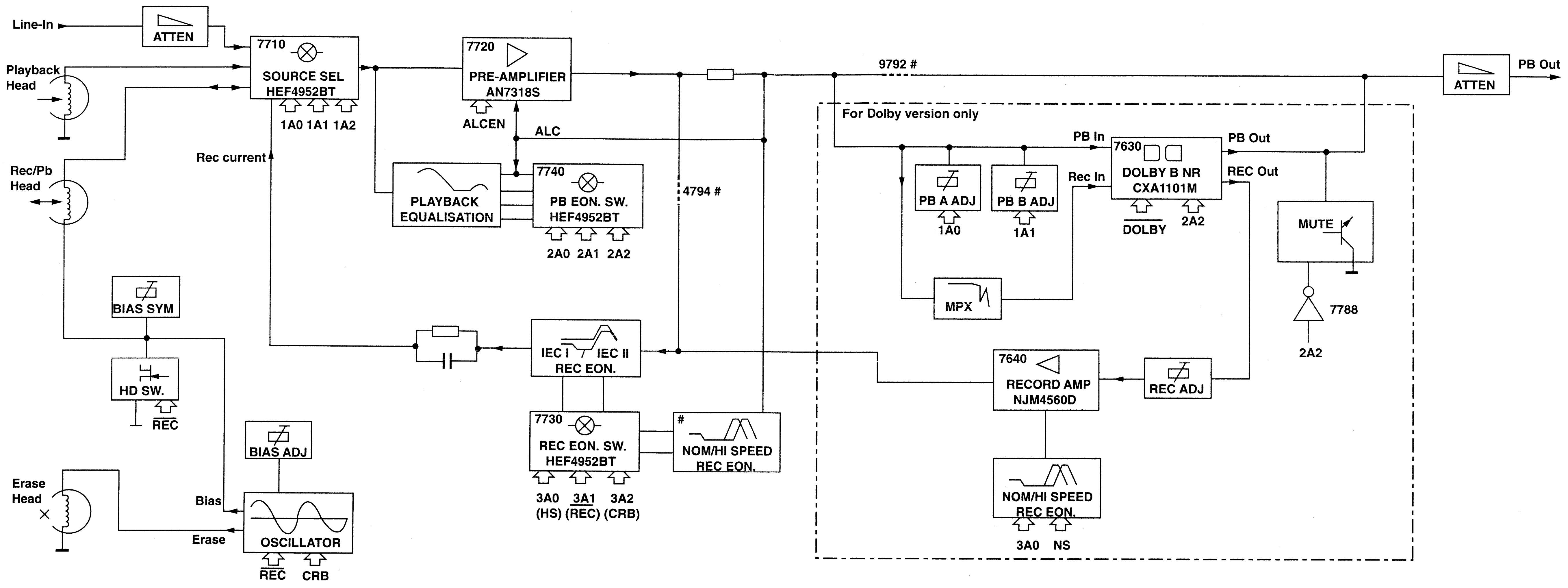
MODULE	**ETF6-FE**	
VARIANT	**1**	**2**
NAME	**ND/DD/FR**	**ND/DD/FF**
Deck configuration	double	double
Autoreverse	yes (B)	no
Auto-replay	no	yes (B)
Motor configuration	single	single
Auto tape type selection	yes	yes
Dolby B type Noise Reduction	no	no
19 kHz pilot suppression	no	no
High speed dubbing	yes	yes

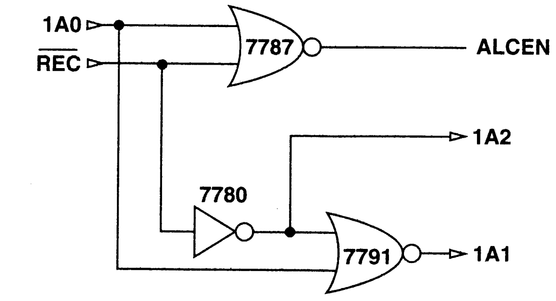
DB	=	Dolby B NR
DD	=	Double Deck
FF	=	Non-Autoreverse
FR	=	Autoreverse Deck B
ND	=	Non-Dolby
SD	=	Single Deck

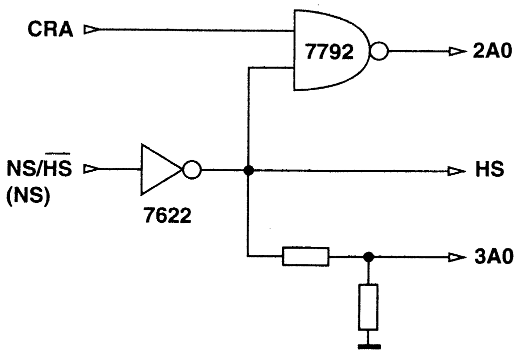
Variations table for Analog Circuit

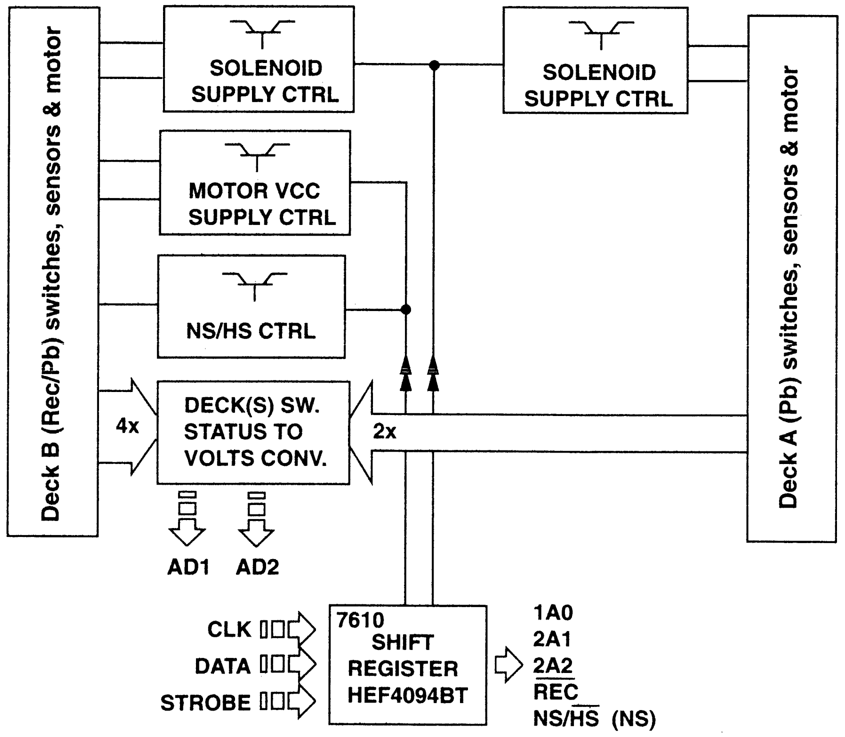
	Autoreverse	Non-autoreverse
	ND/DD/FR	ND/DD/FF
1760	-	-
1770	use	use
3723	12k	15k
3724	12k	15k
3743	1k2	1k
3744	1k2	1k
3769	12k	8k2
3772	4k7	5k6
3774	10k	8k2

BLOCK DIAGRAM


Line-In
ATTEN
Playback Head
Rec/Pb Head
Erase Head
7710
SOURCE SEL
HEF4952BT
1A0 1A1 1A2
7720
PRE-AMPLIFIER
AN7318S
ALCEN
ALC
Rec current
PLAYBACK EQUALISATION
7740
PB EON. SW.
HEF4952BT
2A0 2A1 2A2
4794 #
9792 #
ATTEN
PB Out
For Dolby version only
PB In
7630
DOLBY B NR
CXA1101M
DOLBY
2A2
PB Out
REC Out
Rec In
PB A ADJ
1A0
PB B ADJ
1A1
MPX
MUTE
7788
2A2
BIAS SYM
HD SW.
REC
IEC I
IEC II
REC EON.
7730
REC EON. SW.
HEF4952BT
3A0 3A1 3A2
(HS) (REC) (CRB)
#
NOM/HI SPEED REC EON.
7640
RECORD AMP
NJM4560D
REC ADJ
NOM/HI SPEED REC EON.
3A0 NS
BIAS ADJ
Bias
Erase
OSCILLATOR
REC CRB


1A0
REC
7787
ALCEN
1A2
7780
7791
1A1


CRA
7792
2A0
NS/HS
(NS)
7622
HS
3A0


Deck B (Rec/Pb) switches, sensors & motor
SOLENOID SUPPLY CTRL
MOTOR VCC SUPPLY CTRL
NS/HS CTRL
4x
DECK(S) SW. STATUS TO VOLTS CONV.
2x
AD1 AD2
SOLENOID SUPPLY CTRL
Deck A (Pb) switches, sensors & motor
CLK
DATA
STROBE
7610
SHIFT REGISTER
HEF4094BT
1A0
2A1
2A2
REC
NS/HS (NS)

NOTE: # For Non-dolby version only
Only 1 channel is presented.

▯▯⇨ MicroProcessor Control / Communication lines

⇨ Direct / Indirect Control lines from Shift Registers

Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952B). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952B) and out to the AF Board via connector 1701. For Dolby sets the signal from IC7740 will pass through IC7630 (CXA1551M) for dolby noise processing before going to the connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952B) for record equalization and back to IC7710 (HEF4952B) before registered into the Rec/PB Head of Deck B. For Dolby sets the amplified wll pass through IC7630 (CXA1551M) for dolby noise processing, amplified to the right level by IC7640 (NJM4560M) before record equalization.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then equalised for playback mode by the amplifier IC7720 (AN7318S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952B) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby only)
   Switch S4 of the IC7740 (HEF4952B) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952B)
   The function of the IC7740 (HEF4952B) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952B)
   The function of the IC7730 (HEF4952B) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

14. Motor Speed
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

15. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952B) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is controlled via NS/HS.

Dolby Circuit (For sets with Dolby B NR only)

16. IC7630 (CXA1551M)
    IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/ LOW for NR OFF/ON.

17. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz PilotTone (for Tuner signal only) of the Recording signal.

18. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

19. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non Auto Reverse
FR	Auto Reverse on Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 — INTERCONNECTION TO AF BOARD

○	1	REC-L	Record input left
○	2	REC-R	Record input right
○	3	GND A	AF Ground
○	4	TAPE-L	Playback output left
○	5	+12V	D.C. supply (+12V) in
○	6	TAPE-R	Playback output right
○	7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703 — INTERCONNECTION TO AF BOARD

○	1	GND M	Motor Ground
○	2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706 — INTERCONNECTION TO FRONT BOARD

○	1	AD2	Deck sensing switches output voltage / Deck A EOT
○	2	AD1	Deck sensing switches output voltage / Deck B EOT
○	3	+5	DC supply +5V for ADC network
○	4	GND P	Control & Oscillator Ground
○	5	CLK	HEF4094BT shift register Clock line
○	6	DATA	HEF4094BT shift register Data line
○	7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710 — DECK B HEADS CONNECTON ***(For ETF6... only)***

○	1	B R/P HD L+	R/P Head left channel positive
○	2	GND A	R/P Head return ground
○	3	B R/P HD R+	R/P Head right channel positive
○	4	ERASE HEAD	Erase Head
○	5	GND A	Erase Head ground

CONNECTOR 1720 — DECK B HEADS CONNECTON ***(For ETF5... only)***

○	1	B R/P HD L+	R/P Head left channel positive
○	2	B R/P HD L-	R/P Head left channel negative
○	3	B R/P HD R+	R/P Head right channel positive
○	4	B R/P HD R-	R/P Head right channel negative
○	5	ERASE HEAD	Erase Head
○	6	GND A	Erase Head ground

CONNECTOR 1730 — DECK A HEAD CONNECTIONS ***(For Double Deck versions only)***

○	1	A PB HD L+	Pb Head left channel positive
○	2	GND A	Pb Head return ground shield
○	3	A PB HD R+	Pb Head right channel positive

CONNECTOR 1740 — DECK B CONTROL INTERFACE ***(For ETF5... Double Deck only)***

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply	
○	6	Vcc	Deck / Motor supply	
○	7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	
○	9	H	H pin for motor	
○	10	L	L pin for motor	

CONNECTOR 1750 — DECK A CONTROL INTERFAC ***(For ETF5... Double Deck only)***

○	1	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
○	2	PHOTO A	Photo sensor output (tape movement indication)	
○	3	SOL A	Solenoid supply	
○	4	Vcc	Deck/Motor supply	
○	5	MODE	Mode switch (head engagement)	[open=off: close=engaged]
○	6	GND M	Deck/Motor ground	

CONNECTOR 1760 — DECK B CONTROL INTERFACE ***(For Single Deck only)***

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply	
○	6	Vcc	Deck / Motor supply	
○	7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	

CONNECTOR 1770 — DECK A & B CONTROL INTERFACE ***(For ETF6... only)***

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply for deck B	
○	6	Vcc	Deck / Motor supply	
○	7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	
○	9	L	L pin for motor	
○	10	H	H pin for motor	
○	11	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
○	12	SOL A	Solenoid supply for deck A	
○	13	PHOTO A	Photo sensor output (tape movement indication)	

TAPE MECHANISM ELECTRONICS

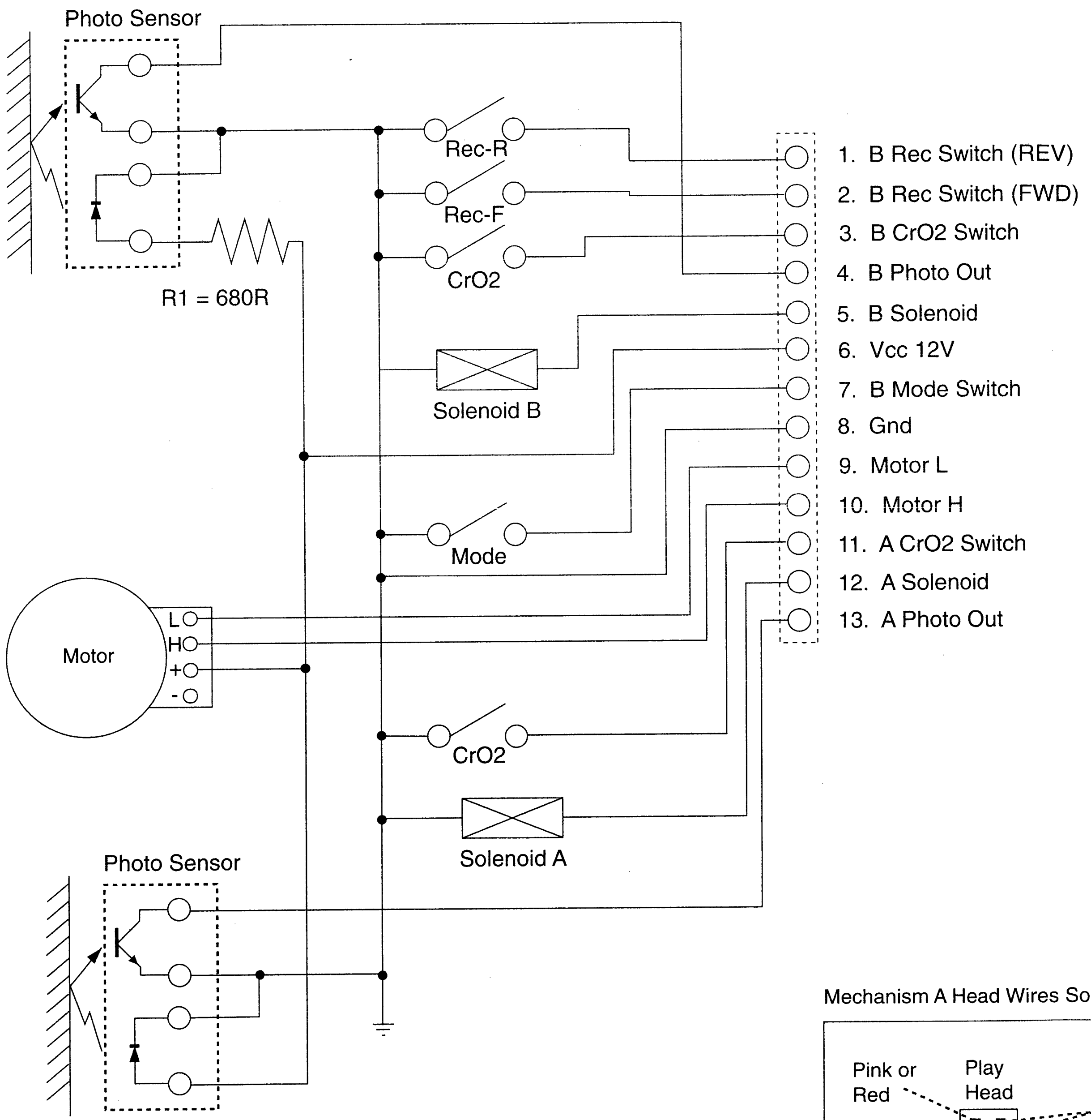
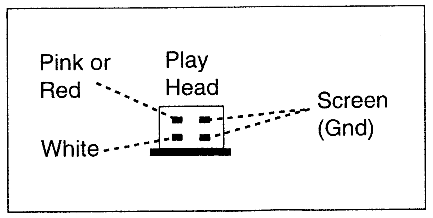
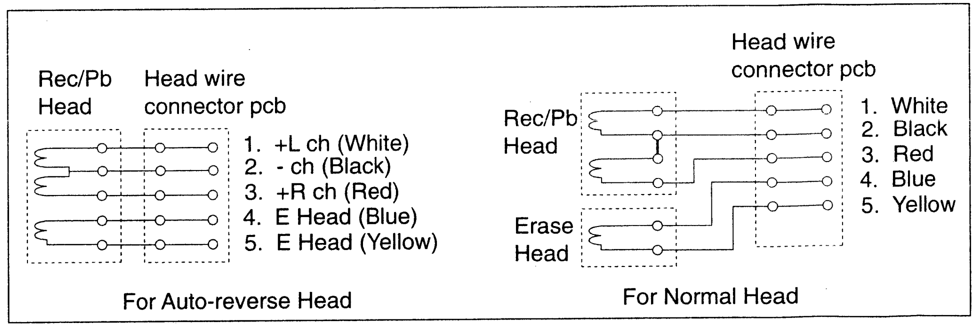


Photo Sensor
Rec-R
Rec-F
CrO2
R1 = 680R
Solenoid B
Mode
Motor
L
H
+
-
CrO2
Solenoid A
Photo Sensor
1. B Rec Switch (REV)
2. B Rec Switch (FWD)
3. B CrO2 Switch
4. B Photo Out
5. B Solenoid
6. Vcc 12V
7. B Mode Switch
8. Gnd
9. Motor L
10. Motor H
11. A CrO2 Switch
12. A Solenoid
13. A Photo Out

Mechanism A Head Wires Soldering


Pink or Red
Play Head
White
Screen (Gnd)

Mechanism B Head Wires Soldering


Rec/Pb Head
Head wire connector pcb
1. +L ch (White)
2. - ch (Black)
3. +R ch (Red)
4. E Head (Blue)
5. E Head (Yellow)
For Auto-reverse Head
Rec/Pb Head
Erase Head
Head wire connector pcb
1. White
2. Black
3. Red
4. Blue
5. Yellow
For Normal Head

TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
NORMAL SPEED	SBC420 3150Hz	PLAY B	1 or 2 LEFT RIGHT	frequency counter	3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check	≤0.4 % DIN
ADJUST AZIMUTH						
DECK A & B	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	
CHECK PLAYBACK FREQUENCY RESPONSE						
DECK A & B	SBC420	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 1
ADJUST BIAS CURRENT						
DECK B	SBC419A	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
	SBC420				check	750mV ± 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	THD-meter	check	≤3% *

SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

For Auto-reverse version only
* If high frequencies are not within limits, decrease bias and re-measure.
If distortion is too high, increase bias and re-meaure

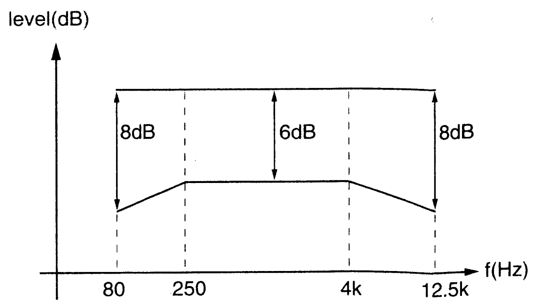


figure. 1

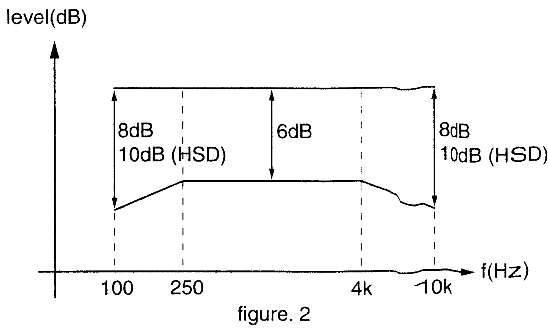
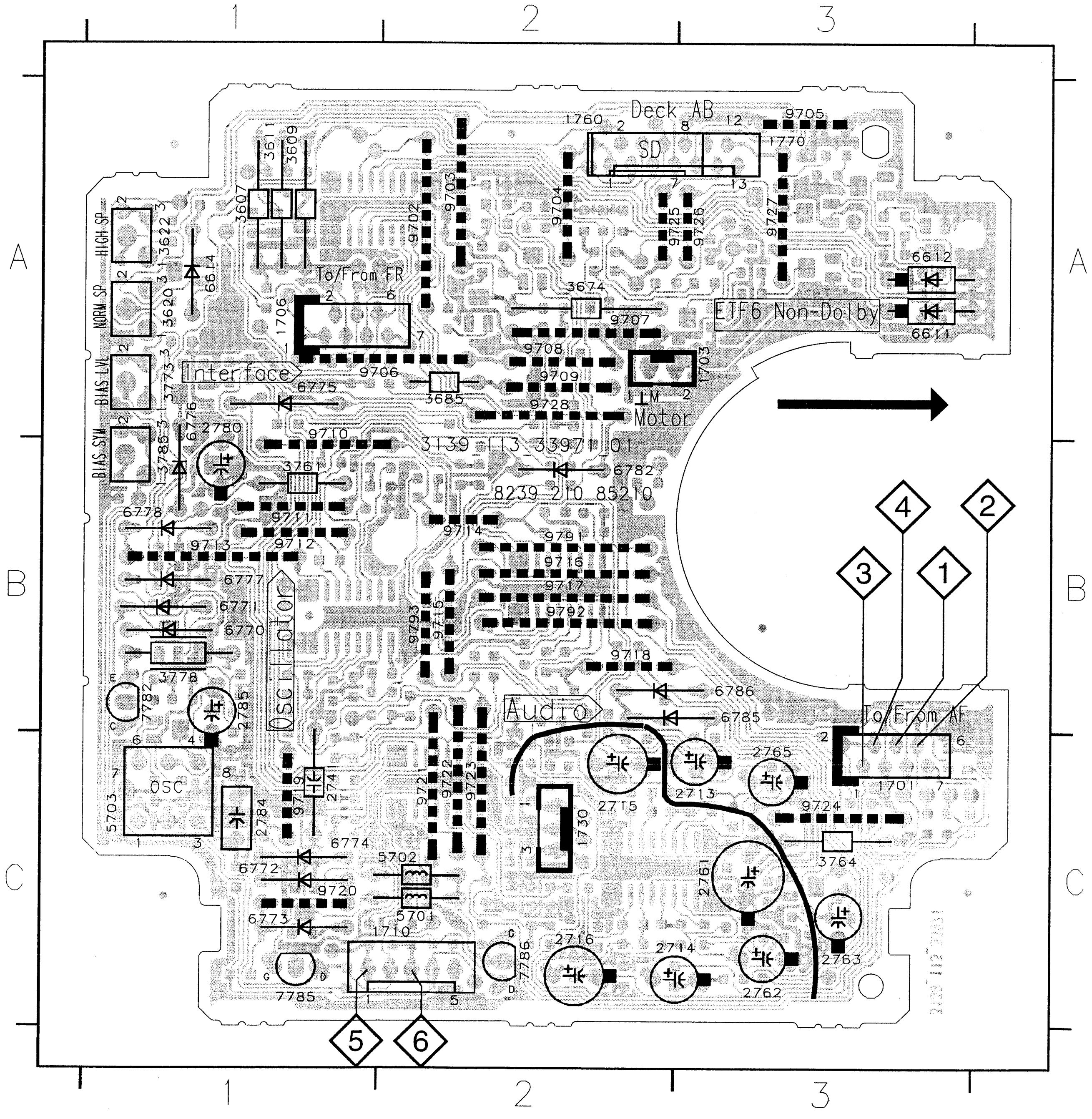


figure. 2

COMPONENT LAYOUT

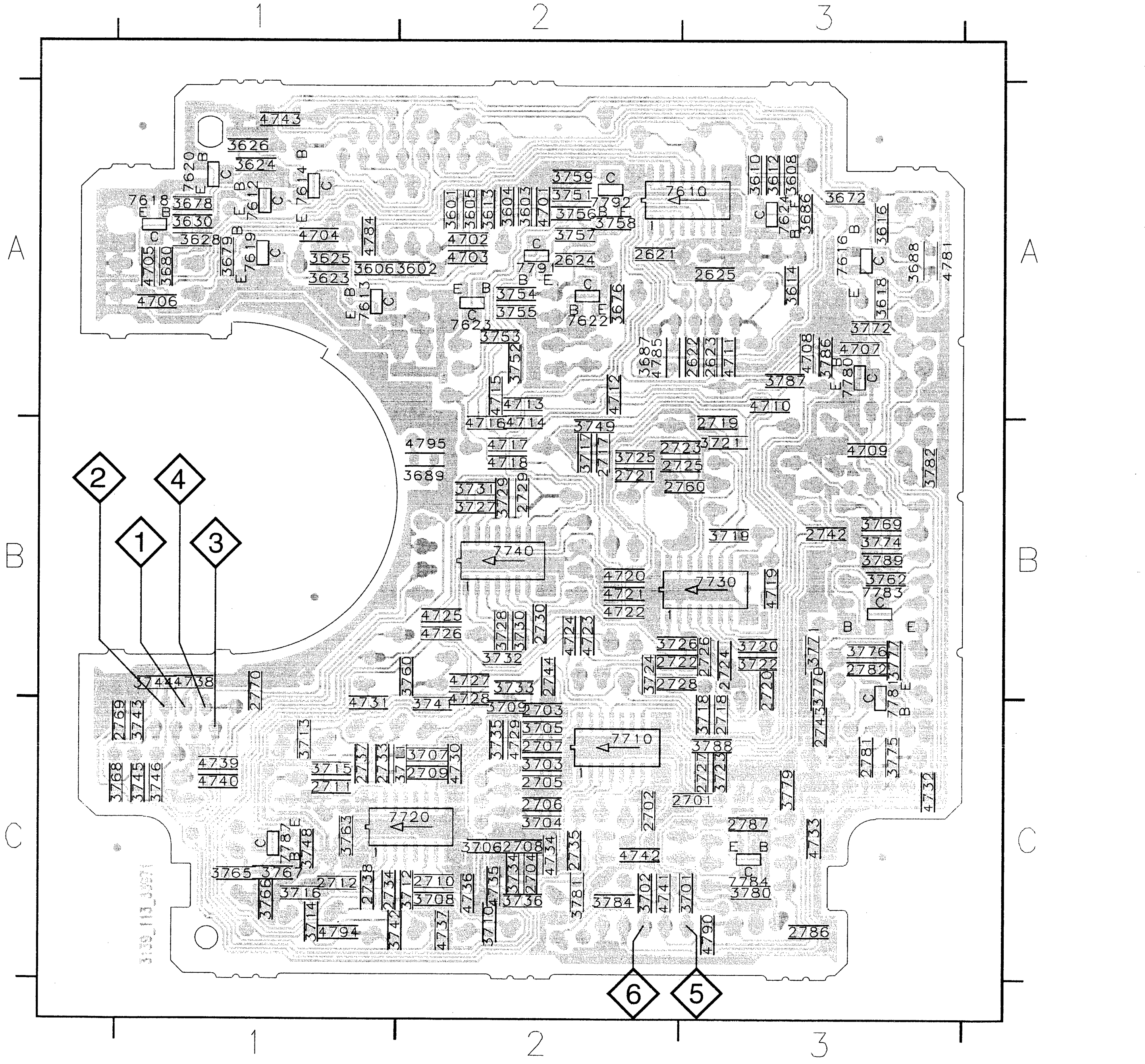
1701	C3	2716	C2	3609	A1	3785	B1	6773	C1	7785	C1	9710	A1	9720	C1	9792	B2		
1703	A3	2741	C1	3611	A1	5701	C2	6774	C1	7786	C2	9711	B1	9721	C2	9793	B2		
1706	A1	2761	C3	3620	A1	5702	C2	6775	A1	9702	A2	9712	B1	9722	C2				
1710	C2	2762	C3	3622	A1	5703	C1	6776	A1	9703	A2	9713	B1	9723	C2				
1730	C2	2763	C3	3674	A2	6611	A3	6777	B1	9704	A2	9714	B2	9724	C3				
1760	A2	2765	C3	3685	A2	6612	A3	6778	B1	9705	A3	9715	B2	9725	A2				
1770	A3	2780	A1	3761	B1	6614	A1	6782	B2	9706	A1	9716	B2	9726	A3				
2713	C3	2784	C1	3764	C3	6770	B1	6785	B3	9707	A2	9717	B2	9727	A3				
2714	C3	2785	B1	3773	A1	6771	B1	6786	B3	9708	A2	9718	B2	9728	A2				
2715	C2	3607	A1	3778	B1	6772	C1	7782	B1	9709	A2	9719	C1	9791	B2				


1
2
3
A
B
C
Deck AB
SD
1760
1770
9705
HIGH SP
NORM SP
BIAS LVL
BIAS SYM
To/From FR
1706
Interface
ETF6 Non-Dolby
6612
6611
3674
9707
9708
9709
9728
9706
3685
1703
LIM
Motor
3139 113 3397 01
8239 210 85210
6782
2780
3761
9710
9711
9712
9713
9714
9716
9717
9792
9718
6778
6777
6771
6770
3778
7782
2785
Oscillator
Audio
6786
6785
To/From AF
1701
OSC
5703
2784
2715
2713
2765
1730
9724
3764
2761
6774
6772
9720
5702
6773
5701
1710
7785
7786
2716
2714
2762
2763
5
6

PCS 101 087

CHIP LAYOUT

2621	A2	2725	B3	3605	A2	3702	C2	3727	B2	3758	A2	3789	B3	4725	B2	7610	A3
2622	A3	2726	B3	3606	A1	3703	C2	3728	B2	3759	A2	4701	A2	4726	B2	7612	A1
2623	A3	2727	C3	3608	A3	3704	C2	3729	B2	3760	B2	4702	A2	4727	B2	7613	A1
2624	A2	2728	B2	3610	A3	3705	C2	3730	B2	3762	B3	4703	A2	4728	C2	7614	A1
2625	A3	2729	B2	3612	A3	3706	C2	3731	B2	3763	C1	4704	A1	4729	C2	7616	A3
2701	C3	2730	B2	3613	A2	3707	C2	3732	B2	3765	C1	4705	A1	4730	C2	7618	A1
2702	C2	2733	C1	3614	A3	3708	C2	3733	B2	3766	C1	4706	A1	4731	C1	7619	A1
2703	C2	2734	C1	3616	A3	3709	C2	3734	C2	3767	C1	4707	A3	4732	C3	7620	A1
2704	C2	2735	C2	3618	A3	3710	C2	3735	C2	3768	C1	4708	A3	4733	C3	7622	A2
2705	C2	2737	C1	3623	A1	3711	C2	3736	C2	3769	B3	4709	B3	4734	C2	7623	A2
2706	C2	2738	C1	3624	A1	3712	C2	3741	C2	3770	B3	4710	A3	4735	C2	7624	A3
2707	C2	2742	B3	3625	A1	3713	C1	3742	C1	3771	B3	4711	A3	4736	C2	7710	C2
2708	C2	2743	C3	3626	A1	3714	C1	3743	C1	3772	A3	4712	A2	4737	C2	7720	C2
2709	C2	2744	B2	3628	A1	3715	C1	3744	B1	3774	B3	4713	A2	4738	B1	7730	B3
2710	C2	2760	B3	3630	A1	3716	C1	3745	C1	3775	C3	4714	B2	4739	C1	7740	B2
2711	C1	2769	C1	3672	A3	3717	B2	3746	C1	3776	B3	4715	A2	4740	C1	7780	A3
2712	C1	2770	B1	3676	A2	3718	C3	3748	C1	3777	B3	4716	B2	4741	C2	7781	B3
2717	B2	2781	C3	3678	A1	3719	B3	3749	B2	3779	C3	4717	B2	4742	C2	7783	B3
2718	C3	2782	B3	3679	A1	3720	B3	3751	A2	3780	C3	4718	B2	4743	A1	7784	C3
2719	B3	2786	C3	3680	A1	3721	B3	3752	A2	3781	C2	4719	B3	4781	A3	7787	C1
2720	B3	2787	C3	3686	A3	3722	B3	3753	A2	3782	B3	4720	B2	4784	A1	7791	A2
2721	B2	3601	A2	3687	A2	3723	C3	3754	A2	3784	C2	4721	B2	4785	A2	7792	A2
2722	B2	3602	A2	3688	A3	3724	B2	3755	A2	3786	A3	4722	B2	4790	C3		
2723	B2	3603	A2	3689	B2	3725	B2	3756	A2	3787	A3	4723	B2	4794	C1		
2724	B3	3604	A2	3701	C3	3726	B2	3757	A2	3788	C3	4724	B2	4795	B2		


1
2
3
A
B
C
4743
3626
3624
7620
7618
3678
3630
3628
7612
7614
4704
4702
4703
3625
3623
3606
3602
4706
7610
3672
2621
2625
7616
3688
4781
3759
3751
3756
3758
7792
3757
2624
7622
7623
3754
3755
3753
3752
4708
4707
3786
7780
3787
4710
4795
3689
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4717
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3749
2719
3721
3725
2723
2725
2721
2760
4709
3782
3719
2742
3769
3774
3789
3762
7783
7740
4720
4721
4722
7730
4719
4725
4726
3728
3730
3732
3726
2722
2728
3720
3722
3776
2782
3744
3738
4727
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3733
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3703
3705
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3704
2705
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7710
3788
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2711
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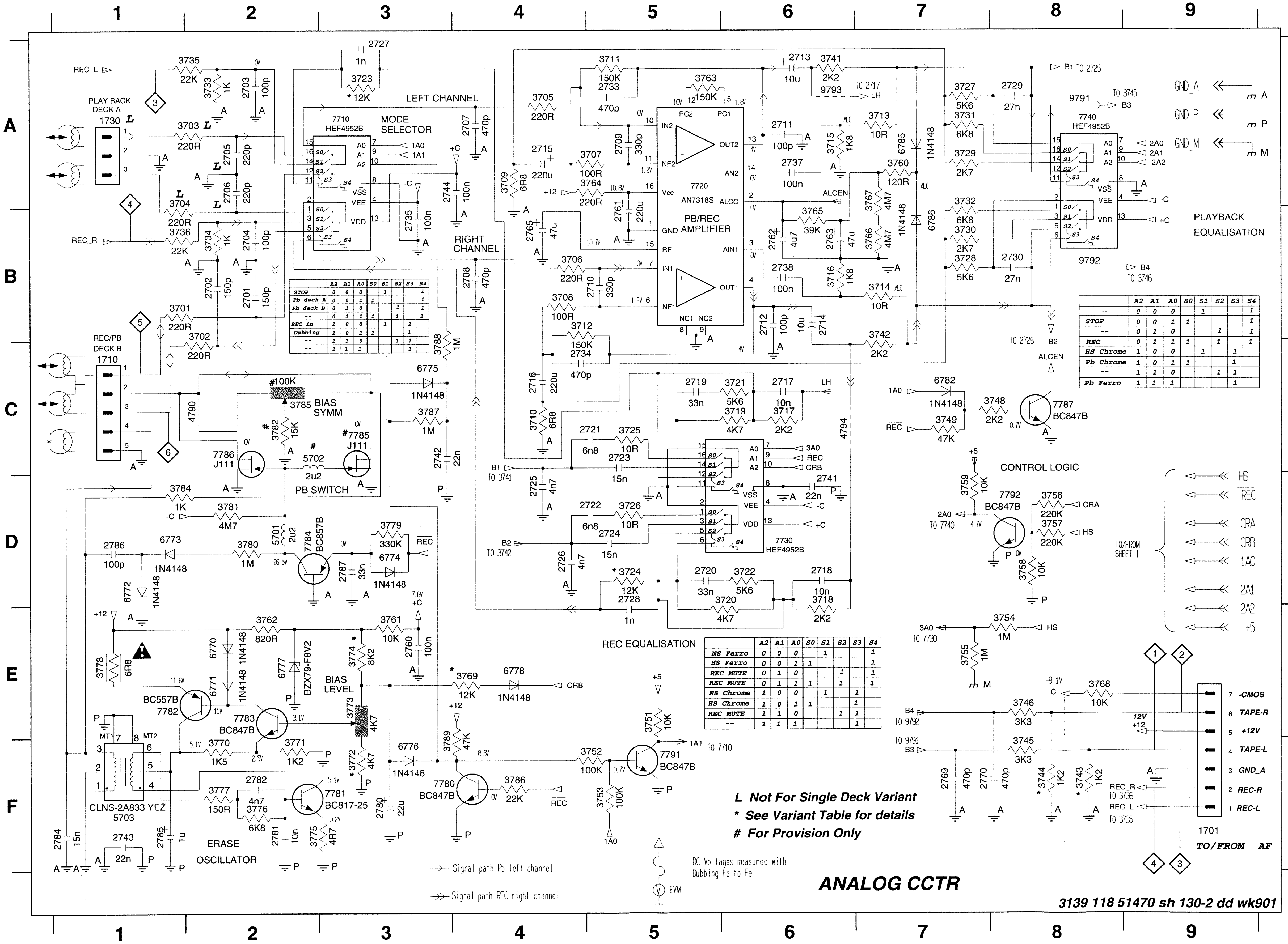
7720
2706
2701
2787
7784
3780
3765
3767
3716
3714
4794
2712
2710
3708
3706
2708
3736
3784
3702
4741
3701
4790
4742
2786
4732
3779
4733
2702
2
4
1
3
6
5

ANALOG CIRCUIT


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
REC_L
REC_R
PLAY BACK DECK A
1730
REC/PB DECK B
1710
LEFT CHANNEL
RIGHT CHANNEL
7710 HEF4952B
MODE SELECTOR
7720 AN7318S
PB/REC AMPLIFIER
7730 HEF4952B
REC EQUALISATION
7740 HEF4952B
PLAYBACK EQUALISATION
CONTROL LOGIC
TO/FROM SHEET 1
HS
REC
CRA
CRB
1A0
2A1
2A2
+5
GND_A
GND_P
GND_M
BIAS SYMM
3785 #100K
PB SWITCH
7786 J111
#7785 J111
# 5702 2u2
BIAS LEVEL
ERASE OSCILLATOR
CLNS-2A833 YEZ
5703
7782 BC557B
7783 BC847B
7781 BC817-25
7784 BC857B
7780 BC847B
7791 BC847B
7792 BC847B
7787 BC847B
BZX79-F8V2
1N4148
1701
TO/FROM AF
7 -CMOS
6 TAPE-R
5 +12V
4 TAPE-L
3 GND_A
2 REC-R
1 REC-L
ALCEN
B1 TO 2725
B2 TO 2726
B3 TO 3745
B4 TO 3746
→ Signal path Pb left channel
→→ Signal path REC right channel
DC Voltages measured with Dubbing Fe to Fe
EVM

	A2	A1	A0	S0	S1	S2	S3	S4
STOP	0	0	0		1			1
Pb deck A	0	0	1	1				1
Pb deck B	0	1	0			1		1
--	0	1	1	1		1		1
REC in	1	0	0		1		1	
Dubbing	1	0	1	1			1	
--	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
NS Ferro	0	0	0		1			1
HS Ferro	0	0	1	1				1
REC MUTE	0	1	0			1		1
REC MUTE	0	1	1	1		1		1
NS Chrome	1	0	0		1		1	
HS Chrome	1	0	1	1			1	
REC MUTE	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
--	0	0	0		1			1
STOP	0	0	1	1				1
--	0	1	0			1		1
REC	0	1	1	1		1		1
HS Chrome	1	0	0		1		1	
Pb Chrome	1	0	1	1			1	
--	1	1	0			1	1	
Pb Ferro	1	1	1				1	

***L* Not For Single Deck Variant**

***** See Variant Table for details**

***#* For Provision Only**

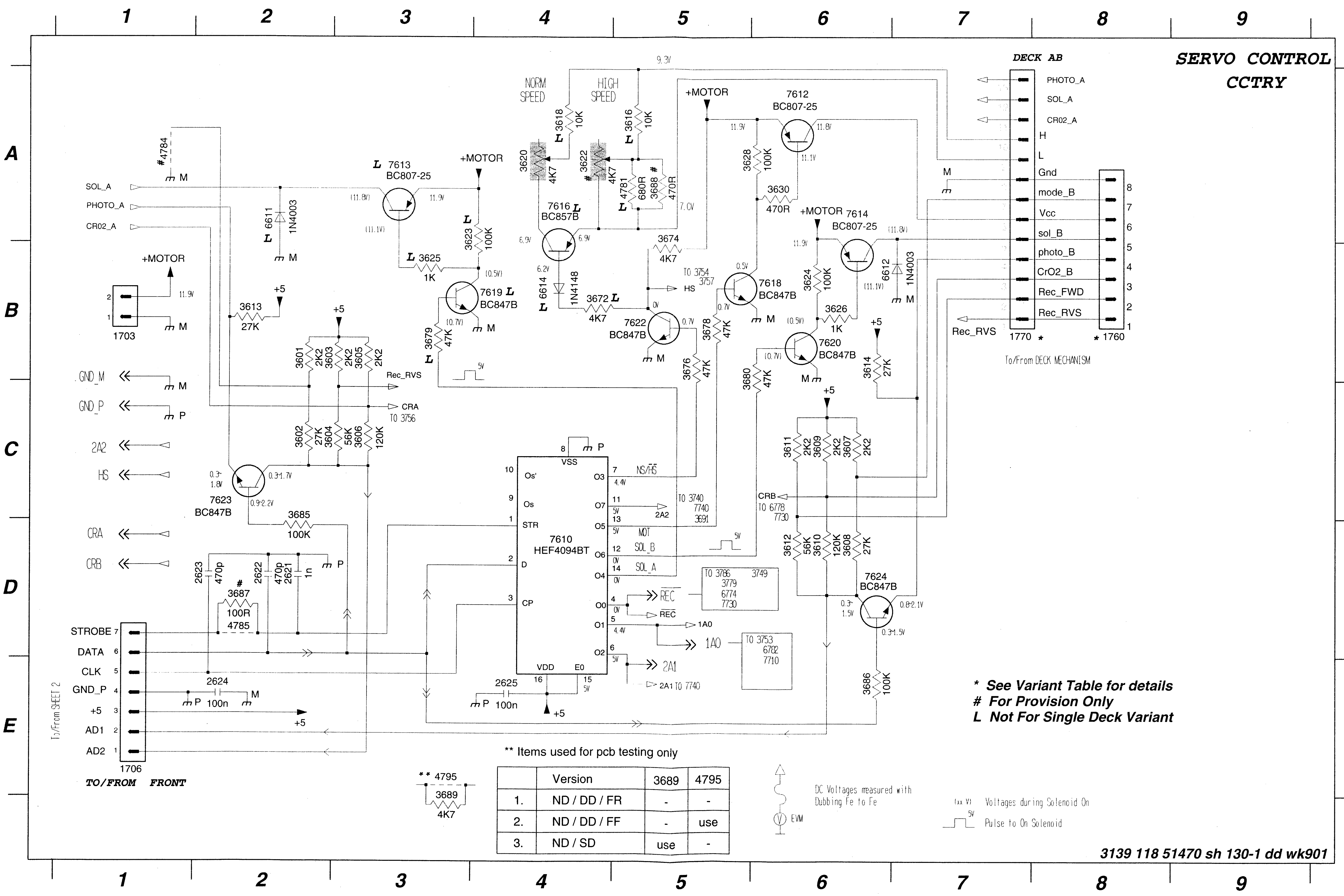
ANALOG CCTR

3139 118 51470 sh 130-2 dd wk901

1701	F9
1710	C1
1730	A1
2701	B2
2702	B2
2703	A2
2704	B2
2705	A2
2706	A2
2707	A4
2708	B4
2709	A5
2710	B5
2711	A6
2712	B6
2713	A6
2714	B6
2715	A4
2716	C4
2717	C6
2718	D6
2719	C5
2720	D5
2721	C5
2722	D5
2723	C5
2724	D5
2725	D4
2726	D4
2727	A3
2728	D5
2729	A8
2730	B8
2733	A5
2734	C4
2735	B3
2737	A6
2738	B6
2741	D6
2742	C3
2743	F1
2744	A3
2760	E3
2761	B5
2762	B6
2763	B6
2765	B4
2769	F7
2770	F7
2780	F3
2781	F2
2782	F2
2784	F1
2785	F1
2786	D1
2787	D3
3701	B1
3702	B2
3703	A2
3704	A1
3705	A4
3706	B4
3707	A5
3708	B4
3709	A4
3710	C4
3711	A5
3712	B4
3713	A7
3714	B7
3715	A6
3716	B6
3717	C6
3718	D6
3719	C6
3720	D6
3721	C6
3722	D6
3723	A3
3724	D5
3725	C5
3726	D5
3727	A7
3728	B7
3729	A7
3730	B7
3731	A7
3732	A7
3733	A2
3734	B2
3735	A2
3736	B1
3741	A6
3742	B7
3743	F8
3744	F8
3745	F8
3746	E8
3748	C8
3749	C7
3751	E5
3752	F5
3753	F5
3754	E8
3755	E7
3756	D8
3757	D8
3758	D8
3759	D7
3760	A7
3761	E3
3762	E2
3763	A5
3764	A5
3765	B6
3766	B7
3767	A7
3768	E8
3769	E4
3770	F2
3771	F2
3772	F3
3773	E3
3774	E3
3775	F2
3776	F2
3777	F2
3778	E1
3779	D3
3780	D2
3781	D2
3782	C2
3784	D1
3785	C2
3786	F4
3787	C3
3788	C3
3789	F3
4790	C2
4794	C6
5701	D2
5702	C2
5703	F1
6770	E2
6771	E2
6772	D1
6773	D1
6774	D3
6775	C3
6776	F3
6777	E2
6778	E4
6782	C7
6785	A7
6786	B7
7710	A3
7720	A5
7730	D6
7740	A8
7780	F4
7781	F3
7782	E1
7783	E2
7784	D2
7785	C3
7786	C2
7787	C8
7791	F5
7792	D8
9791	A8
9792	B8
9793	A6

SERVO CONTROL CIRCUIT

1703 B1	*1770 B7*	*2623 D2*	*3601 B2*	*3604 C2*	*3607 C6*	*3610 D6*	*3613 B2*	*3618 A4*	*3623 A3*	*3626 B6*	*3672 B4*	*3678 B5*	*3685 C2*	*3688 A5*	*4784 A1*	*6611 A2*	*7610 D4*	*7614 A6*	*7619 B4*	*7623 C2*
1706 E1	*2621 D2*	*2624 E2*	*3602 C2*	*3605 B3*	*3608 D6*	*3611 C6*	*3614 B6*	*3620 A4*	*3624 B6*	*3628 A5*	*3674 A5*	*3679 B3*	*3686 E6*	*3689 E3*	*4785 D2*	*6612 B6*	*7612 A6*	*7616 A4*	*7620 B6*	*7624 D6*
1760 B8	*2622 D2*	*2625 E4*	*3603 B2*	*3606 C3*	*3609 C6*	*3612 D6*	*3616 A5*	*3622 A4*	*3625 B3*	*3630 A6*	*3676 B5*	*3680 B5*	*3687 D2*	*4781 A5*	*4795 E3*	*6614 B4*	*7613 A3*	*7618 B6*	*7622 B5*	

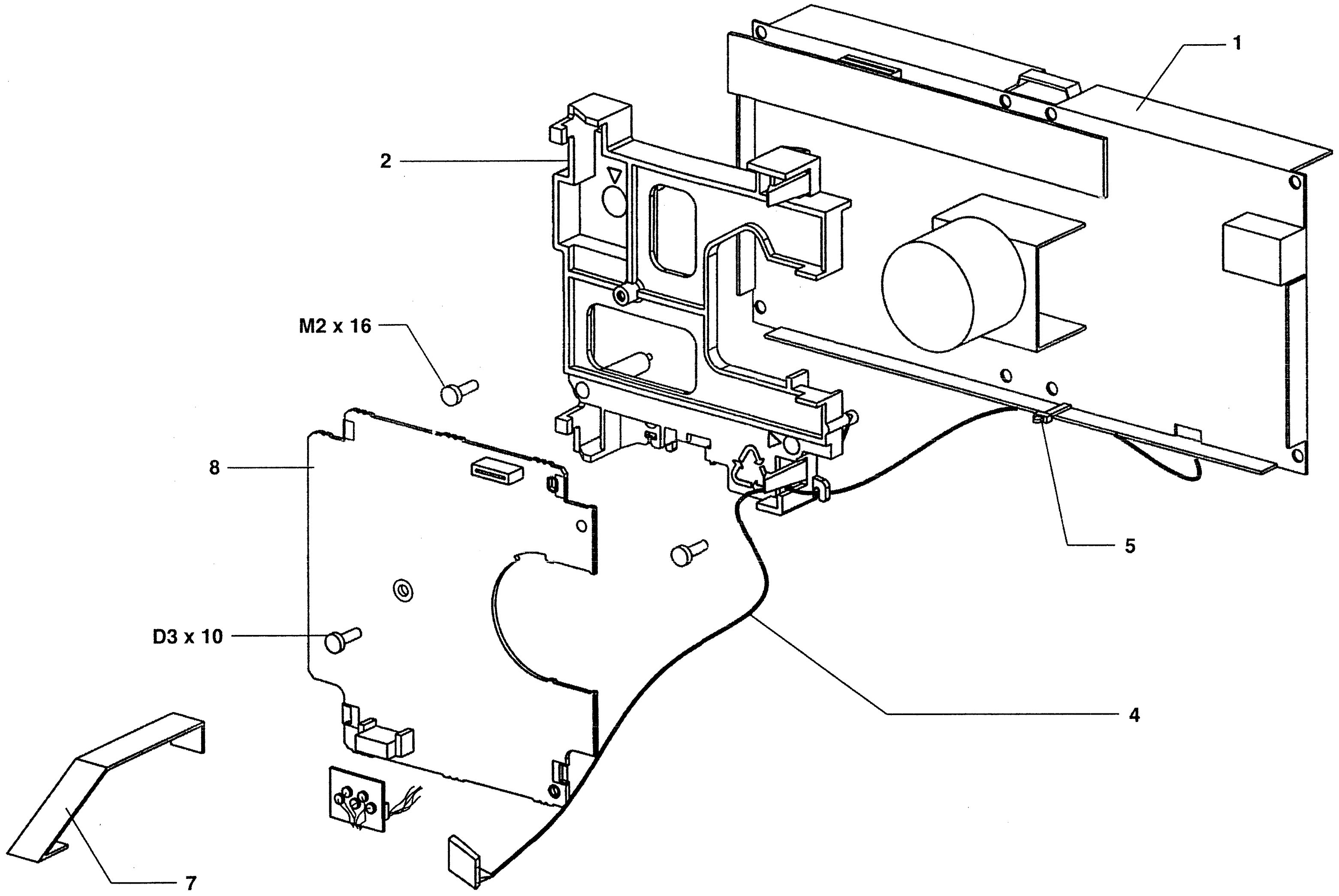

1
2
3
4
5
6
7
8
9
A
B
C
D
E
SERVO CONTROL
CCTRY
DECK AB
PHOTO_A
SOL_A
CR02_A
H
L
Gnd
mode_B
Vcc
sol_B
photo_B
CrO2_B
Rec_FWD
Rec_RVS
Rec_RVS
1770 *
* 1760
To/From DECK MECHANISM
9.3V
NORM SPEED
HIGH SPEED
+MOTOR
7612
BC807-25
7613
BC807-25
7614
BC807-25
7616
BC857B
7618
BC847B
7619
BC847B
7620
BC847B
7622
BC847B
7623
BC847B
7624
BC847B
7610
HEF4094BT
3618 10K
3616 10K
3620 4K7
3622 4K7
4781 680R
3688 470R
3628 100K
3630 470R
3674 4K7
3672 4K7
3623 100K
3625 1K
3679 47K
3613 27K
3624 100K
3626 1K
3614 27K
3678 47K
3676 47K
3680 47K
3601 2K2
3603 2K2
3605 2K2
3602 27K
3604 56K
3606 120K
3611 2K2
3609 2K2
3607 2K2
3612 56K
3610 120K
3608 27K
3685 100K
3686 100K
3687 100R
4785
4784
6611 1N4003
6612 1N4003
6614 1N4148
2623 470p
2622 470p
2621 1n
2624 100n
2625 100n
SOL_A
PHOTO_A
CR02_A
1703
GND_M
GND_P
2A2
HS
CRA
CRB
Rec_RVS
CRA TO 3756
TO 3754 3757
HS
NS/HS
SOL_B
SOL_A
MOT
2A2
TO 3740 7740 3691
REC
REC
1A0
1A0
2A1
2A1 TO 7740
TO 3786 3749 3779 6774 7730
TO 3753 6782 7710
CRB TO 6778 7730
Os'
Os
STR
D
CP
VSS
VDD
E0
O3
O7
O5
O6
O4
O0
O1
O2
STROBE
DATA
CLK
GND_P
+5
AD1
AD2
1706
To/From SHEET 2
TO/FROM FRONT
** 4795
3689
4K7
DC Voltages measured with Dubbing Fe to Fe
EVM
(xx V) Voltages during Solenoid On
5V
Pulse to On Solenoid

** Items used for pcb testing only

	Version	3689	4795
1.	ND / DD / FR	-	-
2.	ND / DD / FF	-	use
3.	ND / SD	use	-

** See Variant Table for details*
# For Provision Only
L Not For Single Deck Variant

3139 118 51470 sh 130-1 dd wk901


1
2
M2 x 16
8
D3 x 10
5
4
7

ETF6 TAPE MODULE EXPLODED VIEW

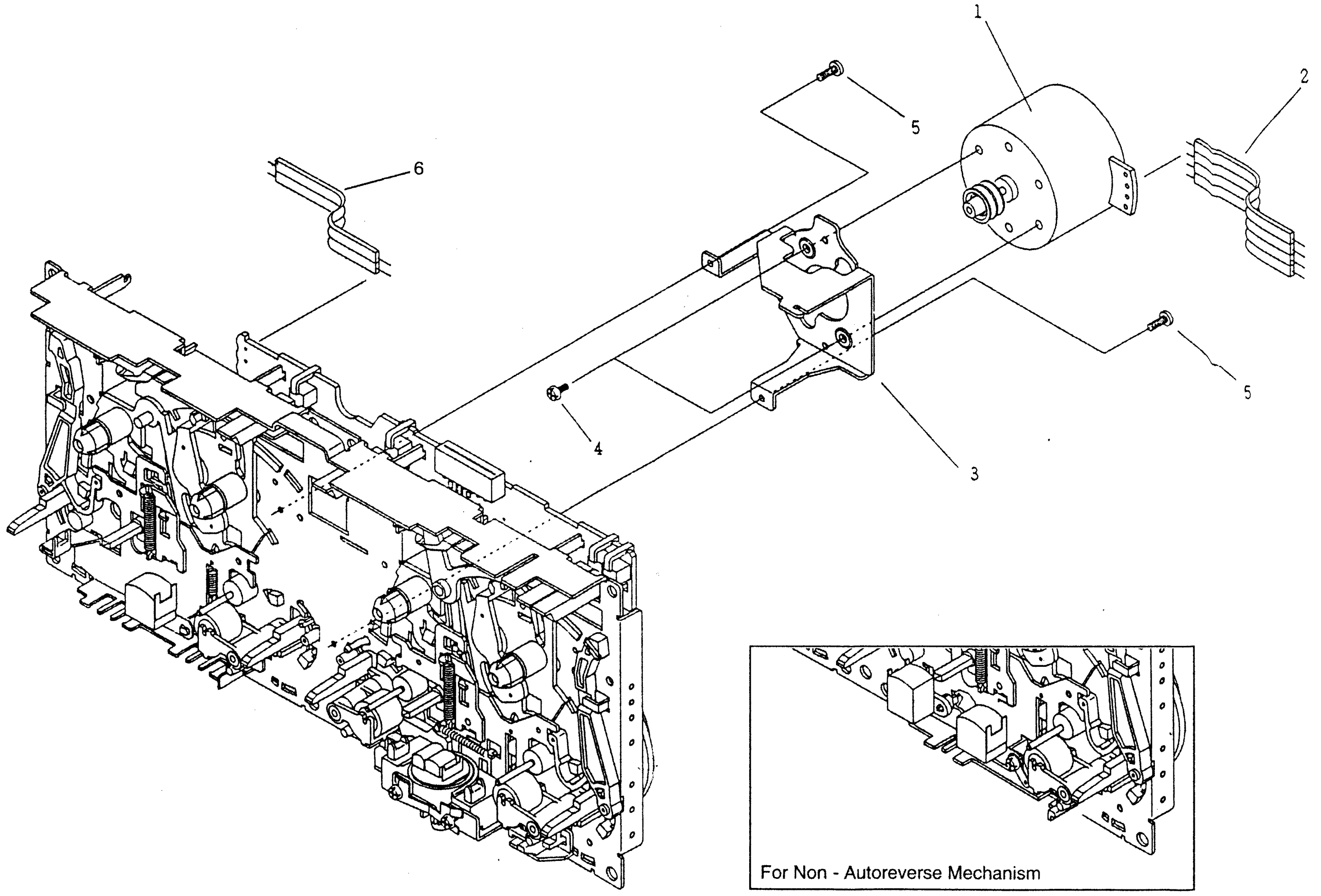
1	4822 691 10673	Autoreverse Mech. CWC44FR02
1	4822 691 10672	Non-Autoreverse Mech. CWC44FF01
7	4822 320 12245	Flex Cable 13 pin 7,5 cm

Note: Only the parts mentioned in this list are normal service spare parts.

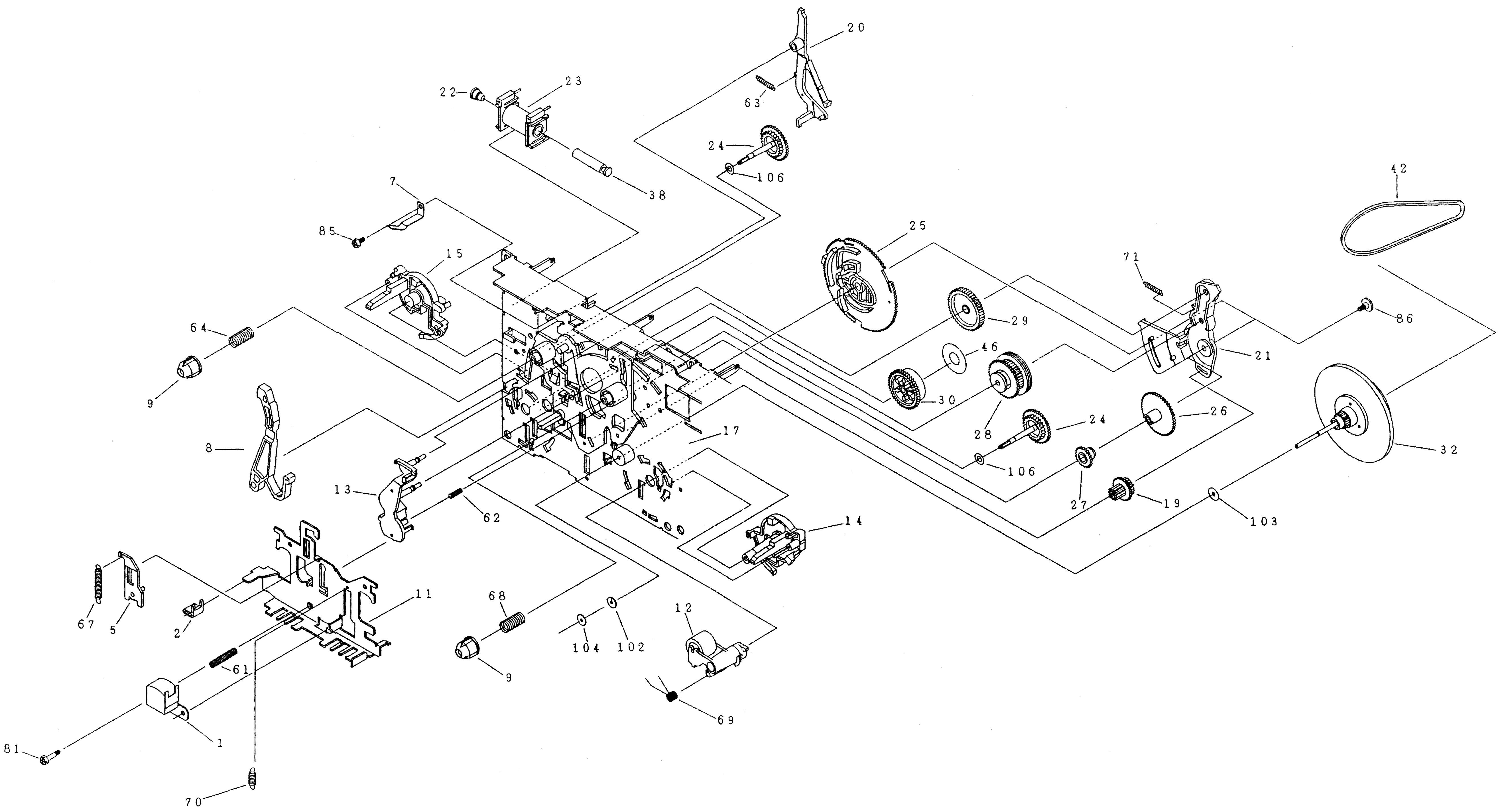
TAPE MECHANISM - MOTOR EXPLODED VIEW

1	4822 361 11055	Motor Assembly
4	-	Screw M2,6 x 4
5	-	Screw M2 x 3

Note: Only the parts mentioned in this list are normal service spare parts.


1
2
5
6
5
4
3
For Non - Autoreverse Mechanism

TAPE MECHANISM A - PLAY


20
22
23
63
24
106
38
7
85
15
42
25
71
86
64
29
46
21
9
30
28
24
26
32
8
17
106
13
62
27
19
103
14
11
68
12
67
5
2
104
102
61
9
69
1
81
70

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	MS15RAA2N1
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
42	4822 358 10168	Belt AF
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in this list are normal service spare parts.

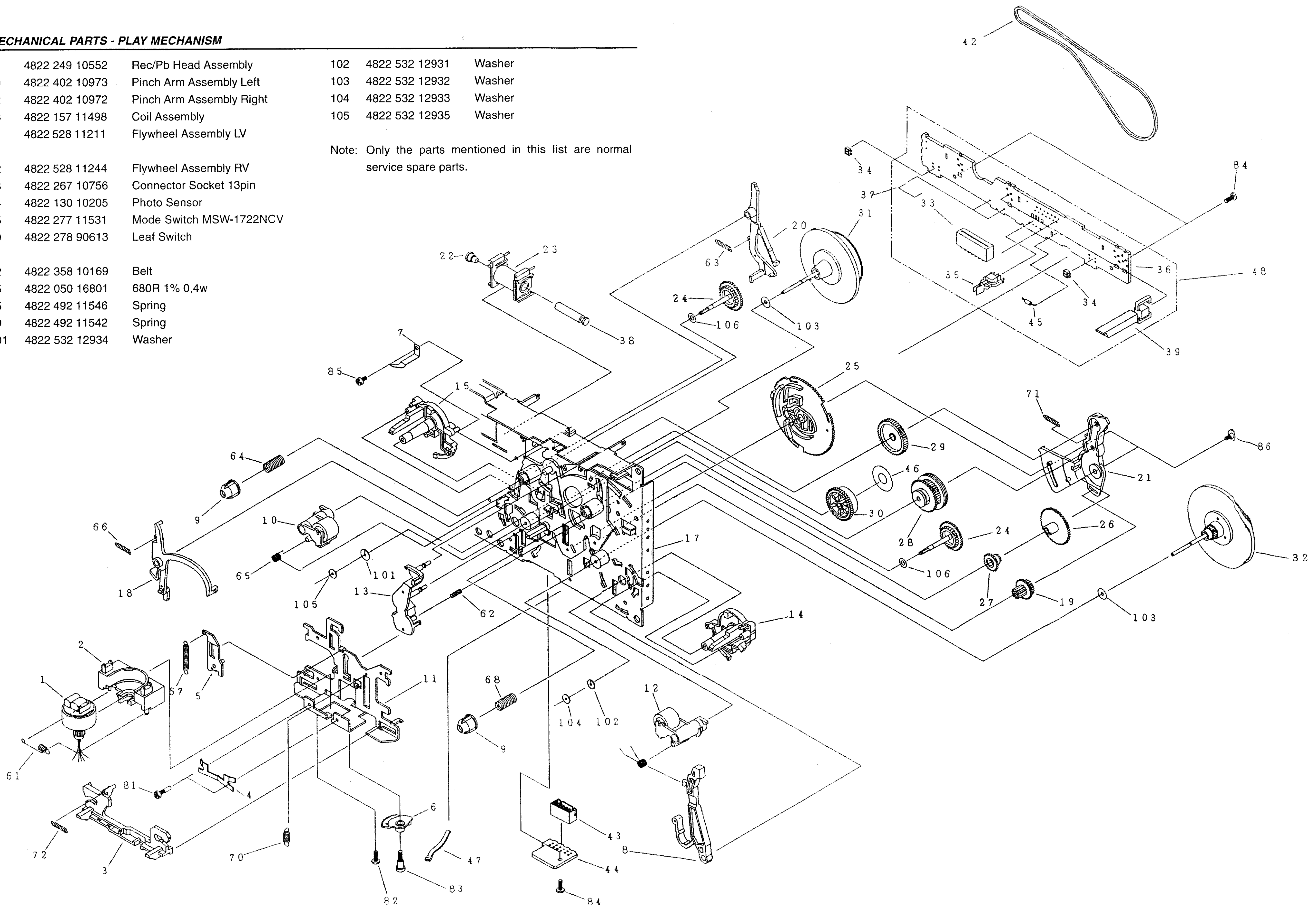
TAPE MECHANISM B - RECORD/PLAYBACK

(Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10552	Rec/Pb Head Assembly
10	4822 402 10973	Pinch Arm Assembly Left
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
31	4822 528 11211	Flywheel Assembly LV
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42	4822 358 10169	Belt
45	4822 050 16801	680R 1% 0,4w
65	4822 492 11546	Spring
69	4822 492 11542	Spring
101	4822 532 12934	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
105	4822 532 12935	Washer

Note: Only the parts mentioned in this list are normal service spare parts.


42
84
34
37
33
31
20
22
23
63
24
106
103
35
36
48
34
45
39
38
7
85
15
25
71
86
29
46
21
64
9
30
28
24
26
10
66
17
65
101
106
32
13
105
18
62
27
19
103
14
2
67
5
11
68
12
1
104
102
9
61
81
4
6
43
72
70
47
8
44
3
82
83
84

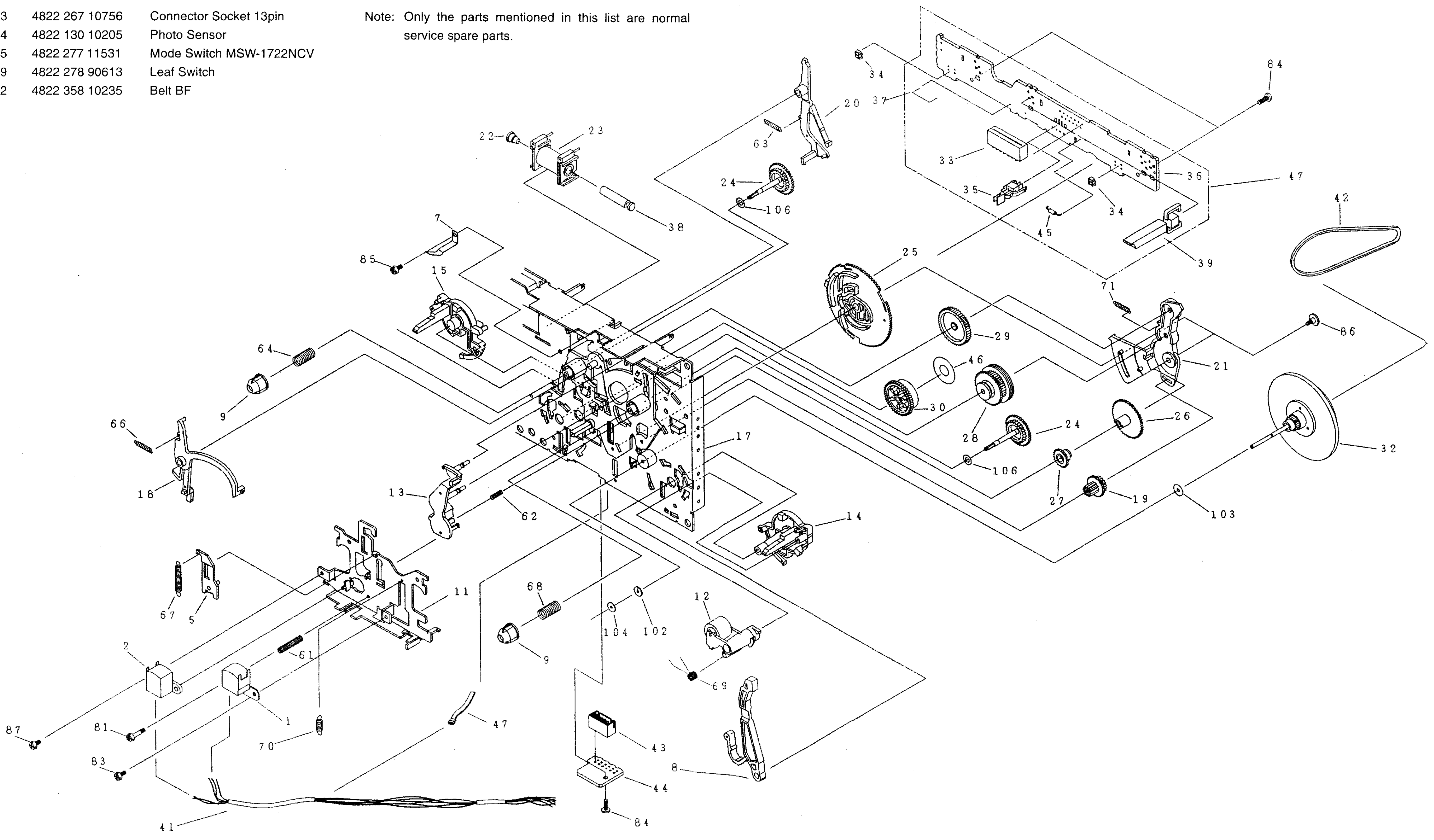
TAPE MECHANISM B - RECORD/PLAYBACK

(Non-Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	Rec/Pb Head Assembly
2	4822 249 40303	Erase Head
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42	4822 358 10235	Belt BF
45	4822 050 16801	680R 1% 0,4w
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in this list are normal service spare parts.


22
23
38
7
85
15
34
37
20
63
24
106
33
35
45
34
36
47
84
42
39
25
71
29
46
30
28
24
106
26
21
86
32
27
19
103
17
14
64
9
66
18
13
62
11
67
5
2
61
1
87
81
83
70
47
68
9
104
102
12
69
43
8
44
84
41

ELECTRICAL PARTS LIST - ETF6-FE NON-DOLBY BOARD

MISCELLANEOUS

1701	4822 267 10953	Flex Socket 7P Vert.
1706	4822 267 10953	Flex Socket 7P Vert.
1770	4822 267 10738	Flex Socket 13P Vert.

CAPACITORS

2621	5322 122 34123	1nF 10% 50V
2622	5322 122 34099	470pF 10% 63V
2623	5322 122 34099	470pF 10% 63V
2624	4822 126 13196	100nF 10% 25V
2625	4822 126 13196	100nF 10% 25V
2701	5322 122 33538	150pF 2% 63V
2702	5322 122 33538	150pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2705	4822 122 33575	220pF 5% 50V
2706	4822 122 33575	220pF 5% 50V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 50V
2710	5322 122 31863	330pF 5% 50V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 41579	10µF 20% 50V
2714	4822 124 41579	10µF 20% 50V
2715	4822 124 40196	220µF 20% 16V
2716	4822 124 40196	220µF 20% 16V
2717	4822 122 33177	10nF 20% 50V
2718	4822 122 33177	10nF 20% 50V
2719	4822 126 12105	33nF 5% 63V
2720	4822 126 12105	33nF 5% 63V
2721	5322 122 31866	6,8nF 10% 63V
2722	5322 122 31866	6,8nF 10% 63V
2723	4822 126 13188	15nF 5% 63V
2724	4822 126 13188	15nF 5% 63V
2725	5322 126 10223	4,7nF 10% 63V
2726	5322 126 10223	4,7nF 10% 63V
2727	5322 122 34123	1nF 10% 50V
2728	5322 122 34123	1nF 10% 50V
2729	4822 122 32541	27nF 10% 63V
2730	4822 122 32541	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 13196	100nF 10% 25V
2737	4822 126 13196	100nF 10% 25V
2738	4822 126 13196	100nF 10% 25V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	5322 122 32654	22nF 10% 63V
2744	4822 126 13196	100nF 10% 25V
2760	4822 126 13196	100nF 10% 25V
2761	4822 124 22263	220µF 20% 25V
2762	4822 124 40246	4,7µF 20% 63V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V
2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 40242	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 63V

RESISTORS

3601	4822 117 11449	2k2 1% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 1% 0,1W
3604	4822 117 11148	56k 1% 0,1W
3605	4822 117 11449	2k2 1% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 117 11148	56k 1% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3616	4822 117 10833	10k 1% 0,1W
3618	4822 117 10833	10k 1% 0,1W
3620	5322 100 11542	Trimmer 4k7 30% 0,1W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 10102	1k 2% 0,25W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 051 20104	100k 5% 0,1W
3630	4822 051 20471	470R 5% 0,1W
3672	4822 051 20472	4k7 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3679	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 051 20104	100k 5% 0,1W
3701	4822 117 11503	220R 1% 0,1W
3702	4822 117 11503	220R 1% 0,1W
3703	4822 117 11503	220R 1% 0,1W
3704	4822 117 11503	220R 1% 0,1W
3705	4822 117 11503	220R 1% 0,1W
3706	4822 117 11503	220R 1% 0,1W
3707	4822 051 20101	100R 5% 0,1W
3708	4822 051 20101	100R 5% 0,1W

ELECTRICAL PARTS LIST - ETF6-FE NON-DOLBY BOARD

3709	4822 051 20688	6R8 5% 0,1W
3710	4822 051 20688	6R8 5% 0,1W
3711	4822 051 20154	150k 5% 0,1W
3712	4822 051 20154	150k 5% 0,1W
3713	4822 051 20109	10R 5% 0,1W
3714	4822 051 20109	10R 5% 0,1W
3715	4822 051 20182	1k8 5% 0,1W
3716	4822 051 20182	1k8 5% 0,1W
3717	4822 117 11449	2k2 1% 0,1W
3718	4822 117 11449	2k2 1% 0,1W
3719	4822 051 20472	4k7 5% 0,1W
3720	4822 051 20472	4k7 5% 0,1W
3721	4822 051 20562	5k6 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W *Autoreverse*
3723	4822 051 20153	15k 5% 0,1W *Non-Autoreverse*
3724	4822 117 11383	12k 1% 0,1W *Autoreverse*
3724	4822 051 20153	15k 5% 0,1W *Non-Autoreverse*
3725	4822 051 20109	10R 5% 0,1W
3726	4822 051 20109	10R 5% 0,1W
3727	4822 051 20562	5k6 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W
3729	4822 117 12955	2k7 1% 0,1W
3730	4822 117 12955	2k7 1% 0,1W
3731	4822 117 11507	6k8 1% 0,1W
3732	4822 117 11507	6k8 1% 0,1W
3733	4822 051 10102	1k 2% 0,25W
3734	4822 051 10102	1k 2% 0,25W
3735	4822 051 20223	22k 5% 0,1W
3736	4822 051 20223	22k 5% 0,1W
3741	4822 117 11449	2k2 1% 0,1W
3742	4822 117 11449	2k2 1% 0,1W
3743	4822 051 20122	1k2 5% 0,1W *Autoreverse*
3743	4822 051 10102	1k 2% 0,25W *Non-Autoreverse*
3744	4822 051 20122	1k2 5% 0,1W *Autoreverse*
3744	4822 051 10102	1k 2% 0,25W *Non-Autoreverse*
3745	4822 051 20332	3k3 5% 0,1W
3746	4822 051 20332	3k3 5% 0,1W
3748	4822 117 11449	2k2 1% 0,1W
3749	4822 117 10834	47k 1% 0,1W
3751	4822 117 10833	10k 1% 0,1W
3752	4822 051 20104	100k 5% 0,1W
3753	4822 051 20104	100k 5% 0,1W
3754	4822 051 20105	1M 5% 0,1W
3755	4822 051 20105	1M 5% 0,1W
3756	4822 117 13579	220k 1% 0,1W
3757	4822 117 13579	220k 1% 0,1W
3758	4822 117 10833	10k 1% 0,1W
3759	4822 117 10833	10k 1% 0,1W
3760	4822 051 20121	120R 5% 0,1W
3761	4822 116 83864	10k 5% 0,5W
3762	4822 117 11454	820R 1% 0,1W
3763	4822 051 20154	150k 5% 0,1W
3764	4822 116 83872	220R 5% 0,5W
3765	4822 051 20393	39k 5% 0,1W
3766	4822 051 20475	4M7 5% 0,1W
3767	4822 051 20475	4M7 5% 0,1W
3768	4822 117 10833	10k 1% 0,1W
3769	4822 117 11383	12k 1% 0,1W *Autoreverse*
3769	4822 051 20822	8k2 5% 0,1W *Non-Autoreverse*
3770	4822 117 11139	1k5 1% 0,1W
3771	4822 051 20122	1k2 5% 0,1W
3772	4822 051 20472	4k7 5% 0,1W *Autoreverse*
3772	4822 051 20562	5k6 5% 0,1W *Non-Autoreverse*
3773	5322 100 11542	Trimmer 4k7 30% 0,1W
3774	4822 117 10833	10k 1% 0,1W *Autoreverse*
3774	4822 051 20822	8k2 5% 0,1W *Non-Autoreverse*
3775	4822 051 20478	4R7 5% 0,1W
3776	4822 117 11507	6k8 1% 0,1W
3777	4822 117 10353	150R 1% 0,1W
3778	4822 052 10688 ⚠	6R8 5% 0,33W
3779	4822 051 20334	330k 5% 0,1W
3780	4822 051 20105	1M 5% 0,1W
3781	4822 051 20475	4M7 5% 0,1W
3784	4822 051 10102	1k 2% 0,25W
3786	4822 051 20223	22k 5% 0,1W
3787	4822 051 20105	1M 5% 0,1W
3788	4822 051 20105	1M 5% 0,1W
3789	4822 117 10834	47k 1% 0,1W
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805
4704	4822 051 20008	0R Jumper 0805
4705	4822 051 20008	0R Jumper 0805
4706	4822 051 20008	0R Jumper 0805
4707	4822 051 20008	0R Jumper 0805
4708	4822 051 20008	0R Jumper 0805
4709	4822 051 20008	0R Jumper 0805
4710	4822 051 20008	0R Jumper 0805
4711	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805
4717	4822 051 20008	0R Jumper 0805
4718	4822 051 20008	0R Jumper 0805
4719	4822 051 20008	0R Jumper 0805
4720	4822 051 20008	0R Jumper 0805
4721	4822 051 20008	0R Jumper 0805
4722	4822 051 20008	0R Jumper 0805
4723	4822 051 20008	0R Jumper 0805
4724	4822 051 20008	0R Jumper 0805
4725	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - ETF6-FE NON-DOLBY BOARD

RESISTORS

4726	4822 051 20008	0R Jumper 0805
4727	4822 051 20008	0R Jumper 0805
4728	4822 051 20008	0R Jumper 0805
4729	4822 051 20008	0R Jumper 0805
4730	4822 051 20008	0R Jumper 0805
4731	4822 051 20008	0R Jumper 0805
4732	4822 051 20008	0R Jumper 0805
4733	4822 051 20008	0R Jumper 0805
4734	4822 051 20008	0R Jumper 0805
4735	4822 051 20008	0R Jumper 0805
4736	4822 051 20008	0R Jumper 0805
4737	4822 051 20008	0R Jumper 0805
4738	4822 051 20008	0R Jumper 0805
4739	4822 051 20008	0R Jumper 0805
4740	4822 051 20008	0R Jumper 0805
4741	4822 051 20008	0R Jumper 0805
4742	4822 051 20008	0R Jumper 0805
4781	4822 051 20681	680R 5% 0,1W
4785	4822 051 20008	0R Jumper 0805
4790	4822 051 20008	0R Jumper 0805
4794	4822 051 20008	0R Jumper 0805
4795	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5701	4822 157 11477	Coil 2,2µH 5%
5703	4822 156 20946	Oscillator Coil 100kHz

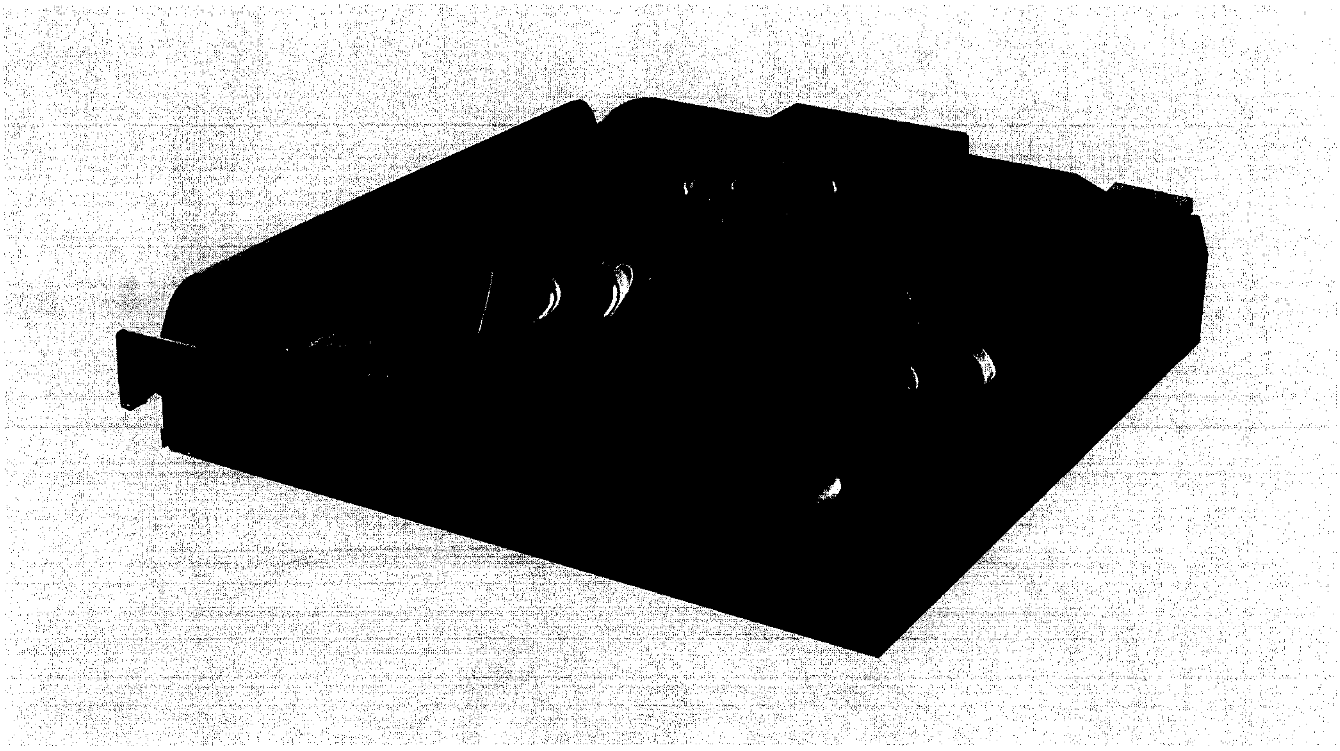
DIODES

6611	4822 130 31878	1N4003G
6612	4822 130 31878	1N4003G
6614	4822 130 30621	1N4148
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-B8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7613	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7616	5322 130 60508	BC857B
7618	4822 130 60511	BC847B
7619	4822 130 60511	BC847B
7620	4822 130 60511	BC847B
7622	4822 130 60511	BC847B
7623	4822 130 60511	BC847B
7624	4822 130 60511	BC847B
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	4822 130 60511	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	4822 130 60511	BC847B
7784	5322 130 60508	BC857B
7786	4822 130 63494	J111
7787	4822 130 60511	BC847B
7791	4822 130 60511	BC847B
7792	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.



3CDC 99 Module

(3 Disc Carrousel Changer)

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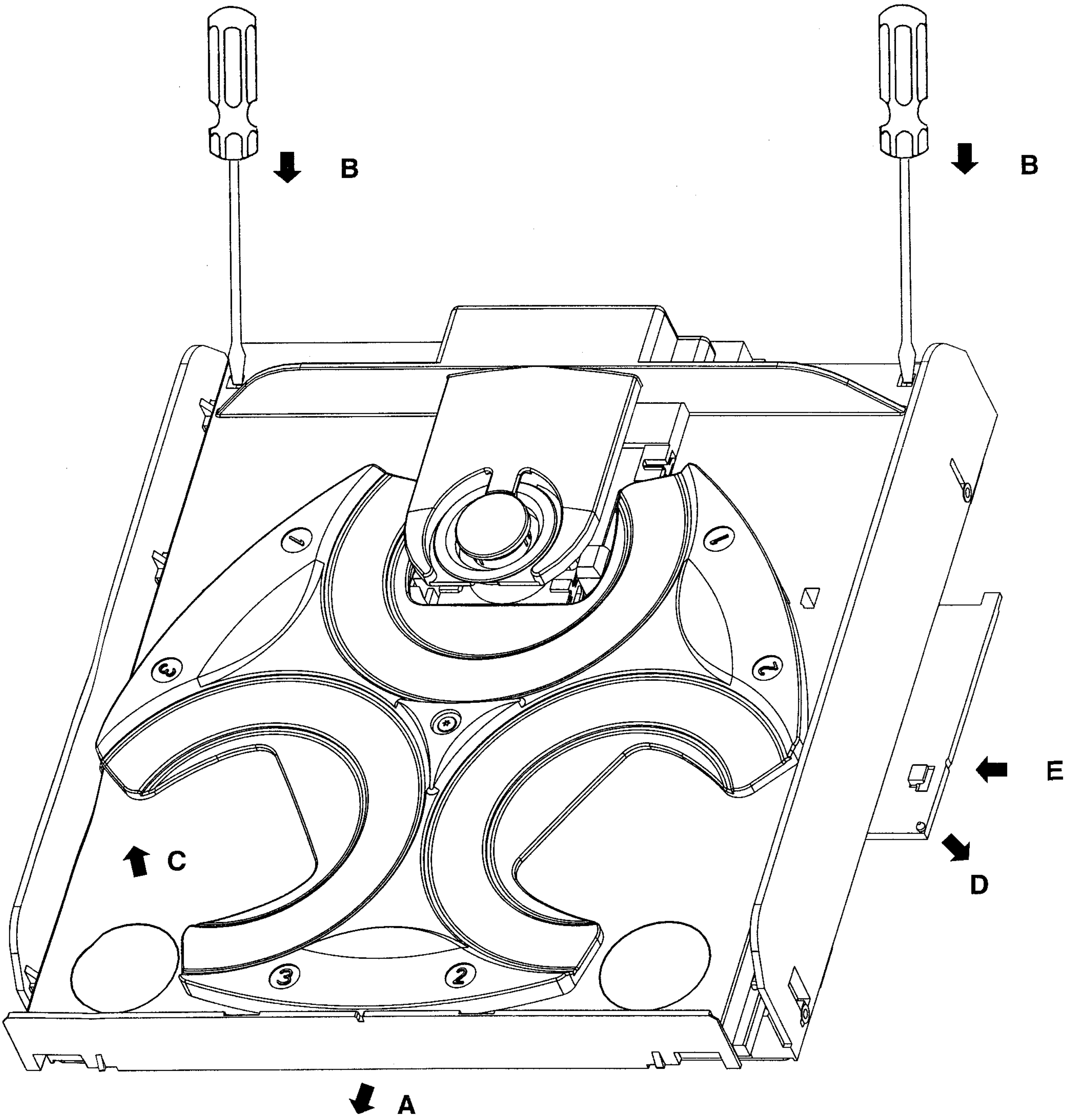
Demounting Hints



Demounting of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Demounting of Flex Plate

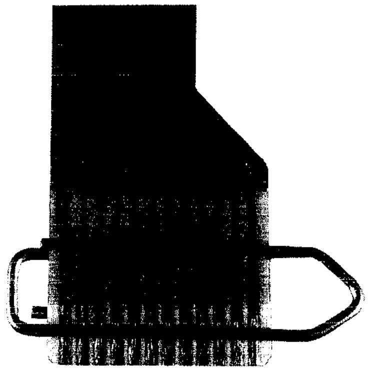
→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

Servicing Hints

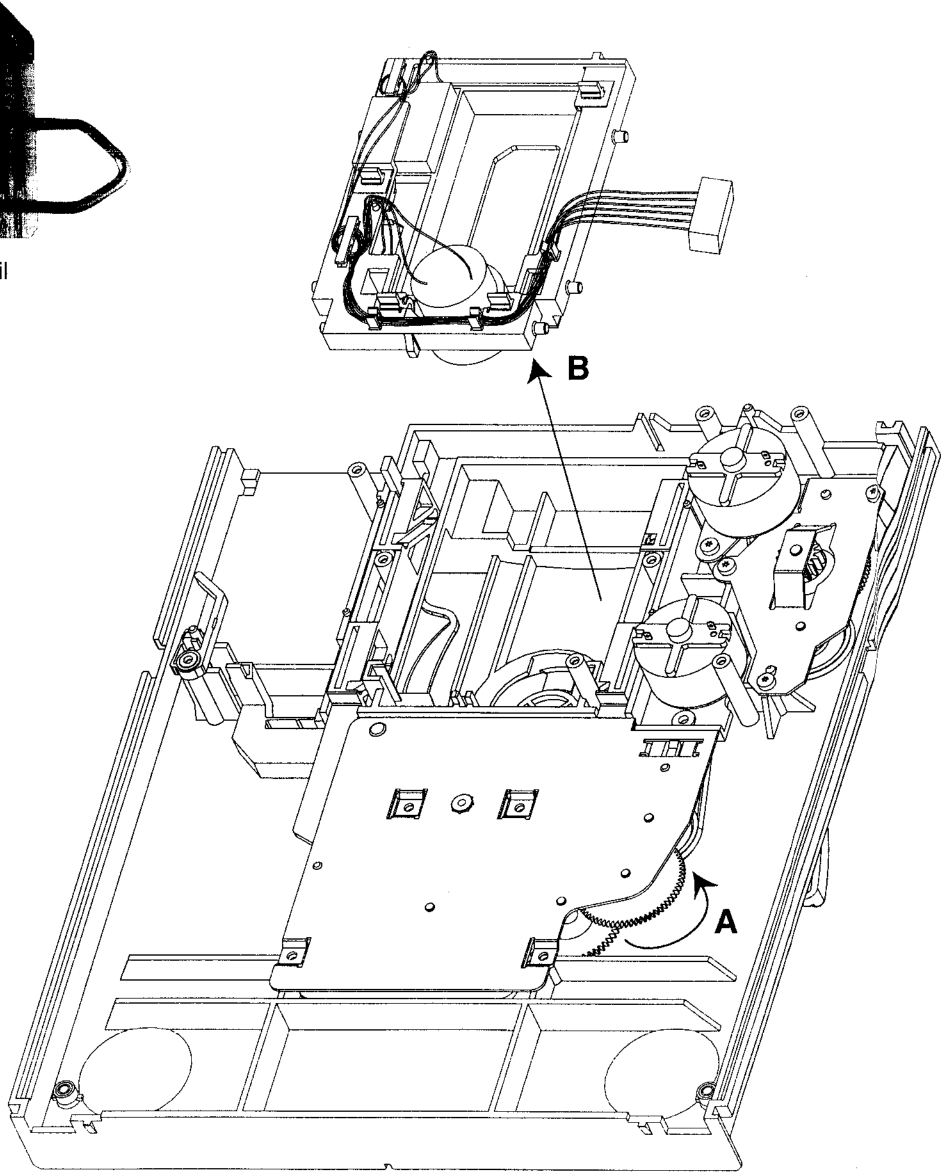
Replacement of CD Drive

See also exploded view of changer mechanism.

1. Demount printed circuit board: remove 5 screws.
2. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.
3. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
4. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
5. Demount CD drive support (pos 95) Ⓑ.
6. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.



CD drive flex foil

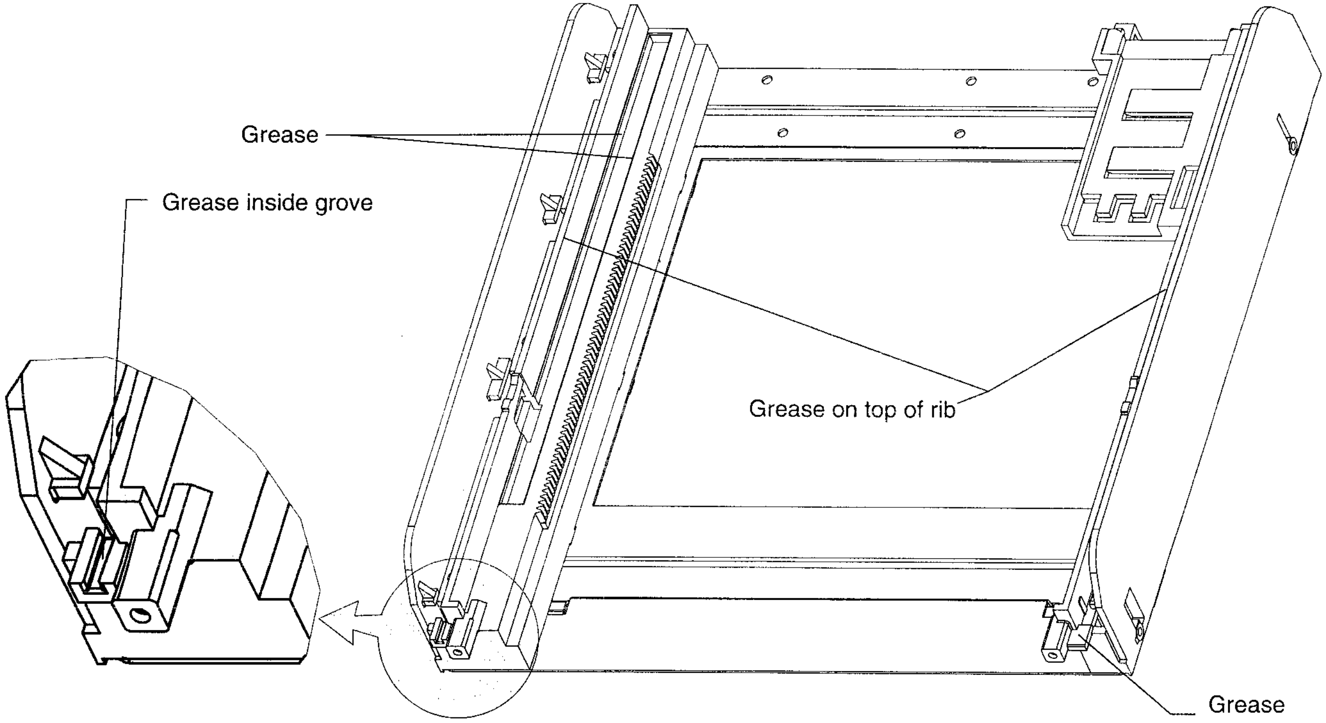


Mounting of Carrousel

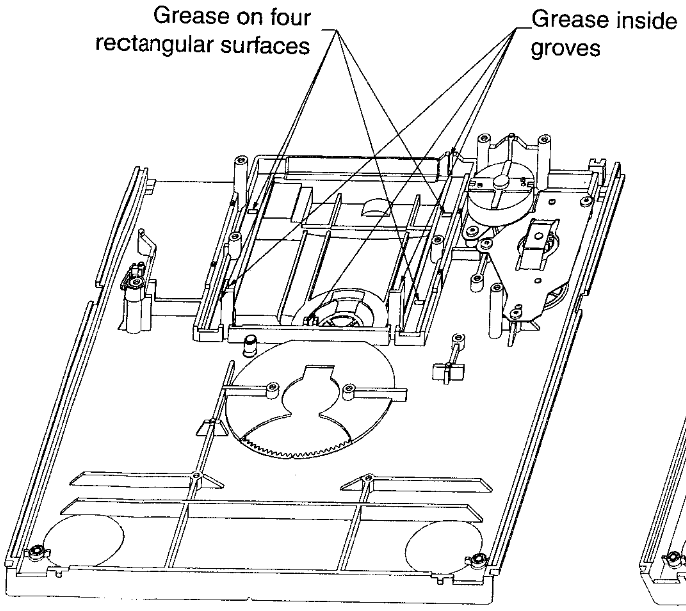
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn´t matter.

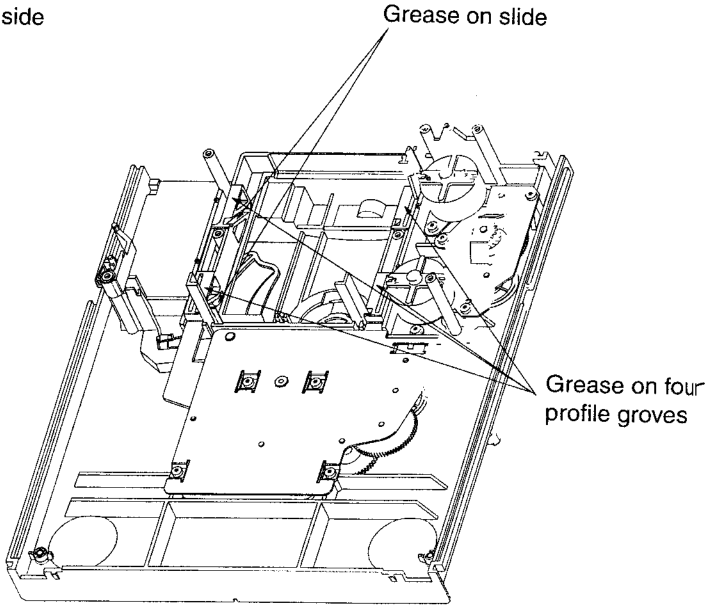
Lubrication Instructions

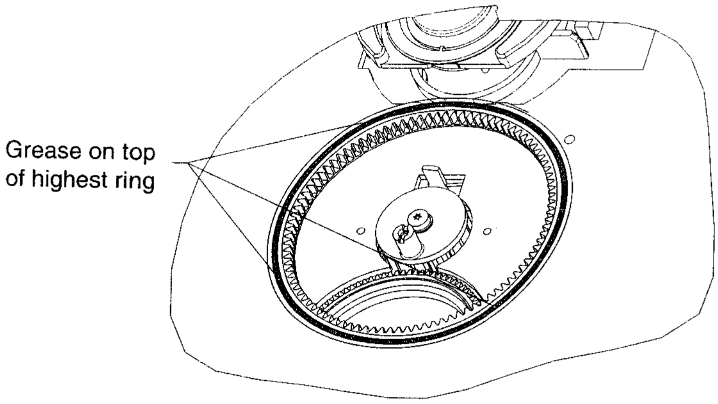
CHASSIS


Grease
Grease inside grove
Grease on top of rib
Grease

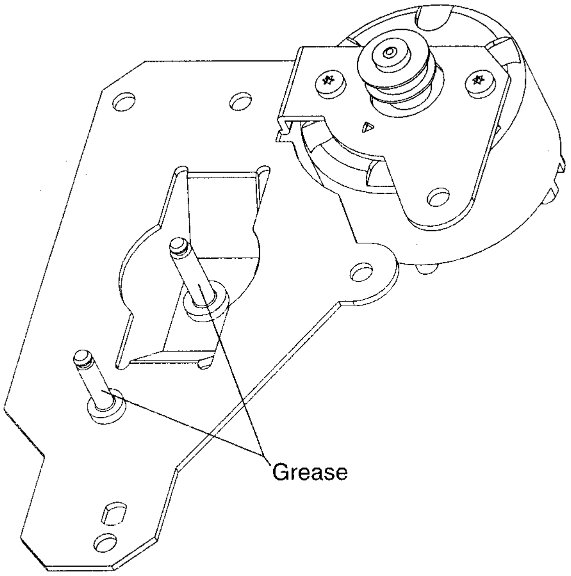
DRAWER


Grease on four rectangular surfaces
Grease inside groves

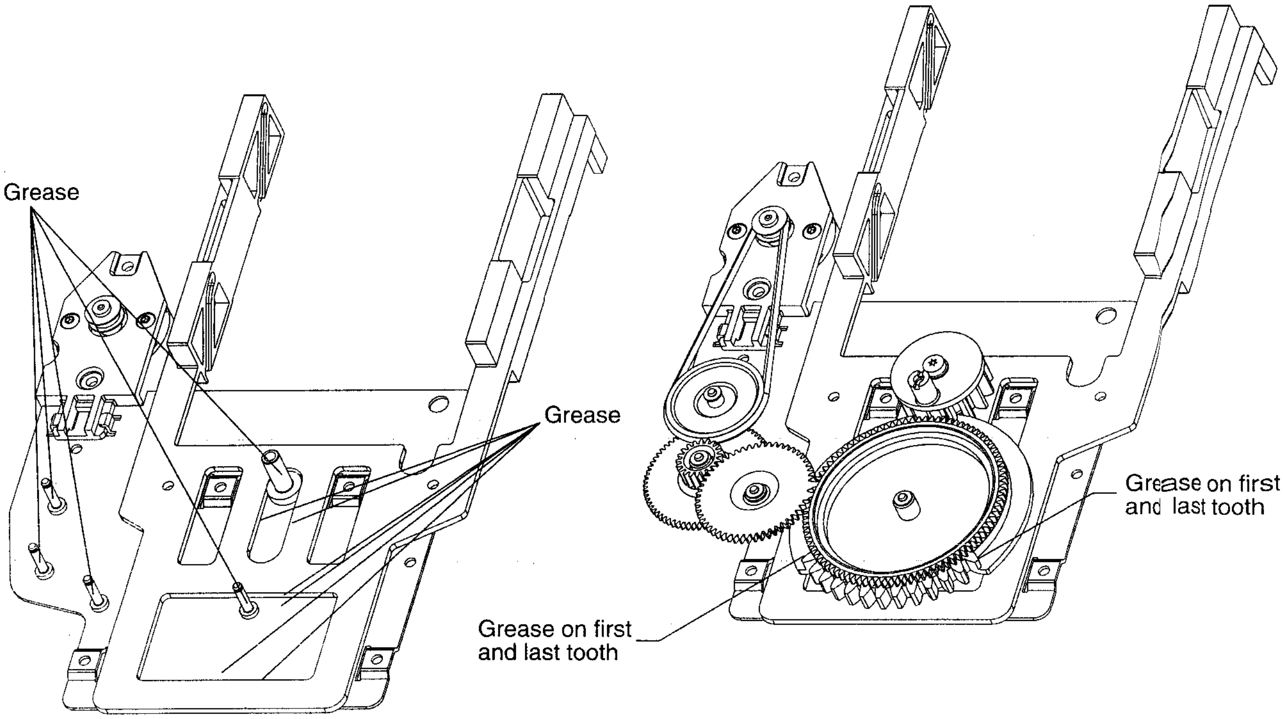

Grease on slide
Grease on four profile groves


Grease on top of highest ring

DRAWER MECHANISM



DISC CHANGE MECHANISM


Grease
Grease
Grease on first and last tooth
Grease on first and last tooth

Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE

- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:

1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

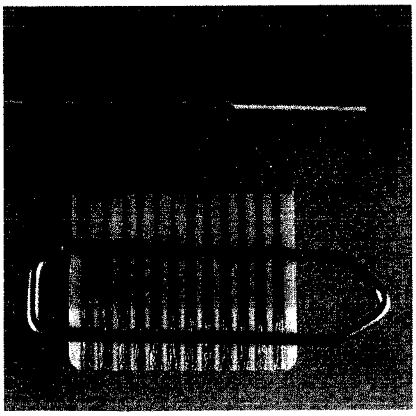


fig.1

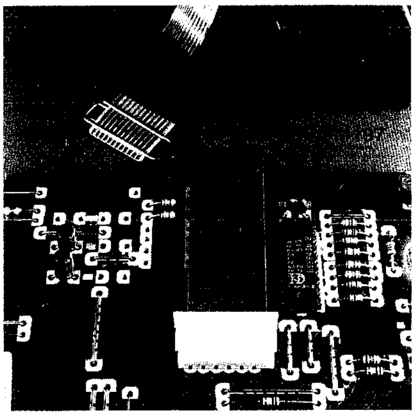


fig.2

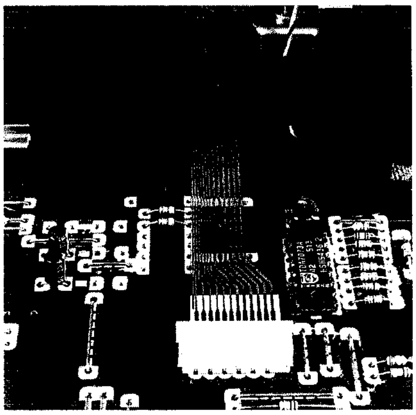
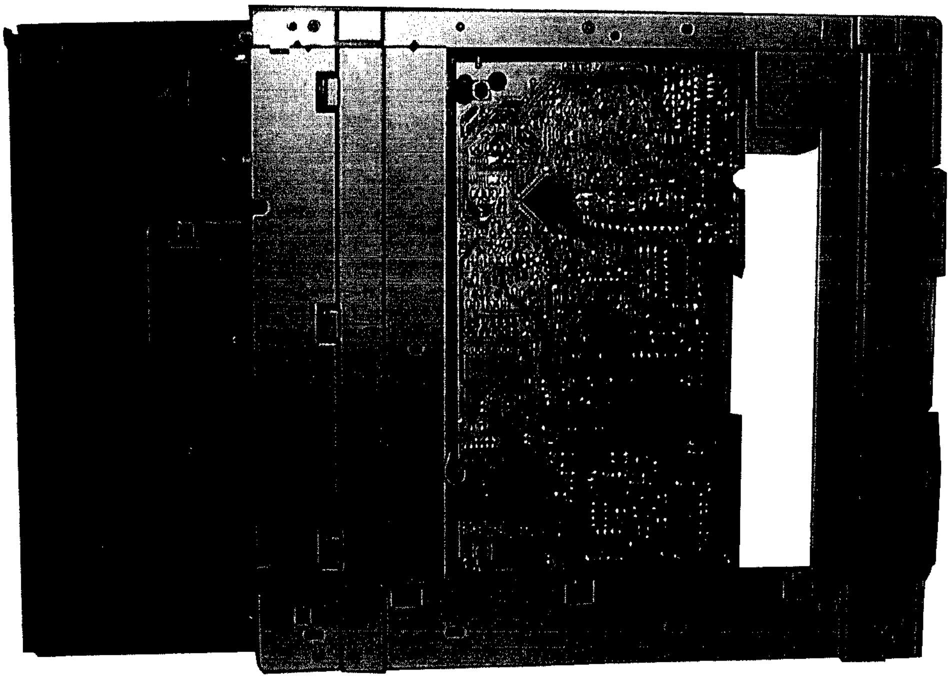
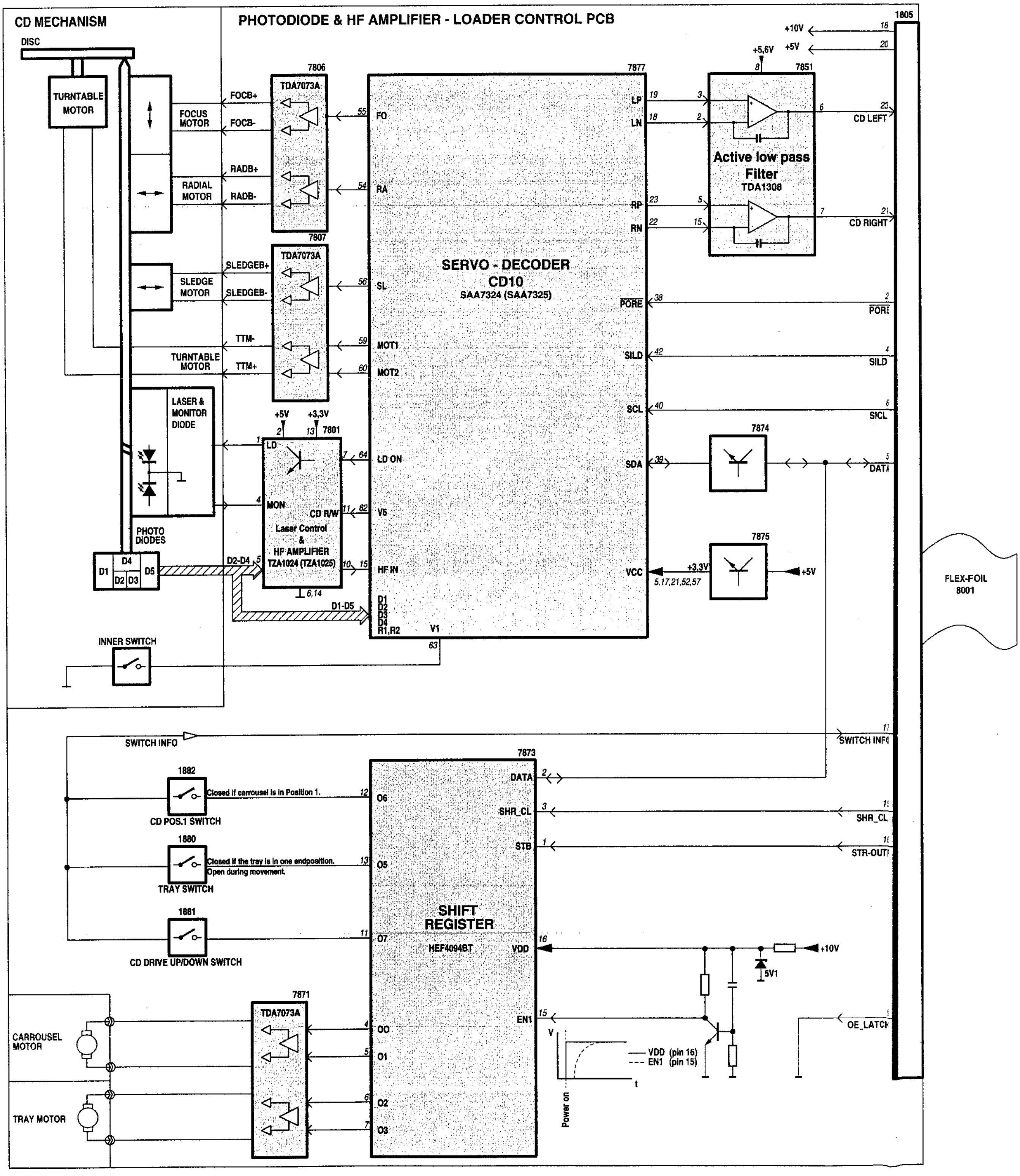


fig.3

Service Position

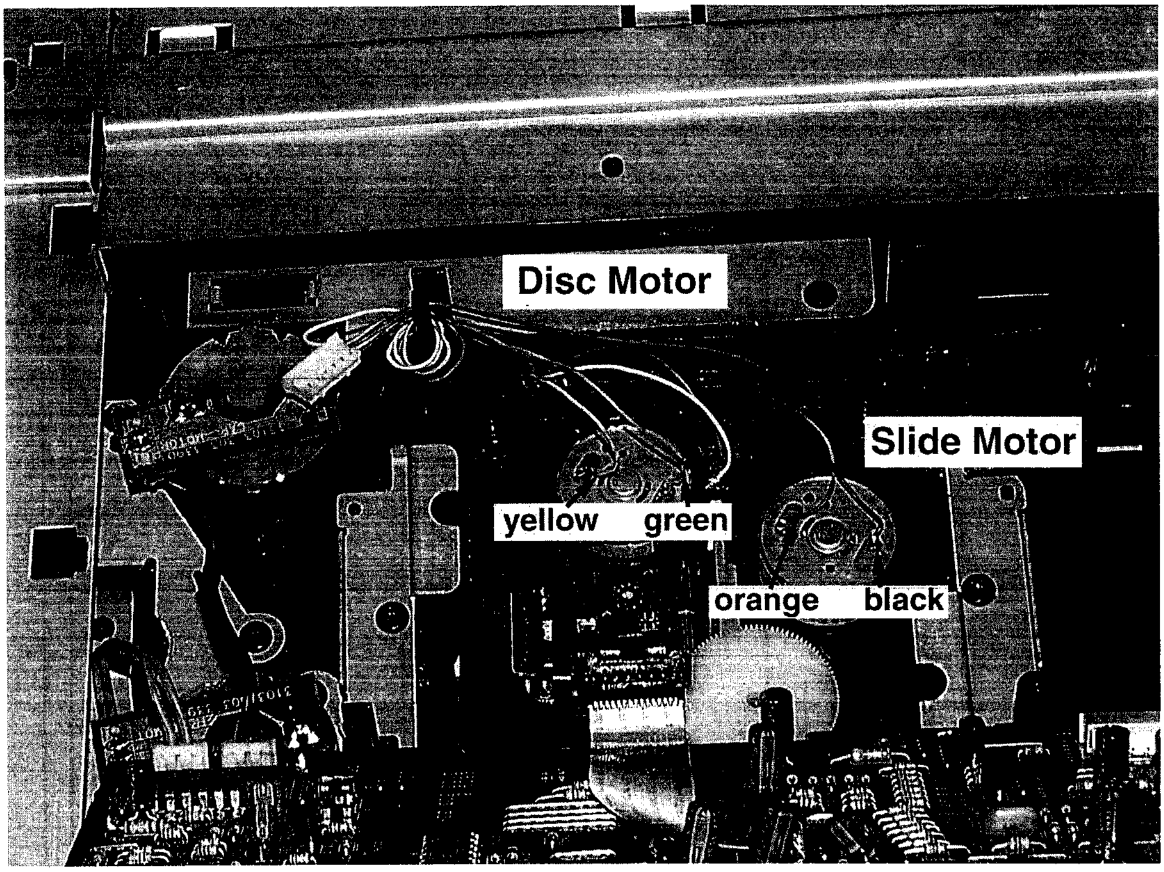


Blockdiagram

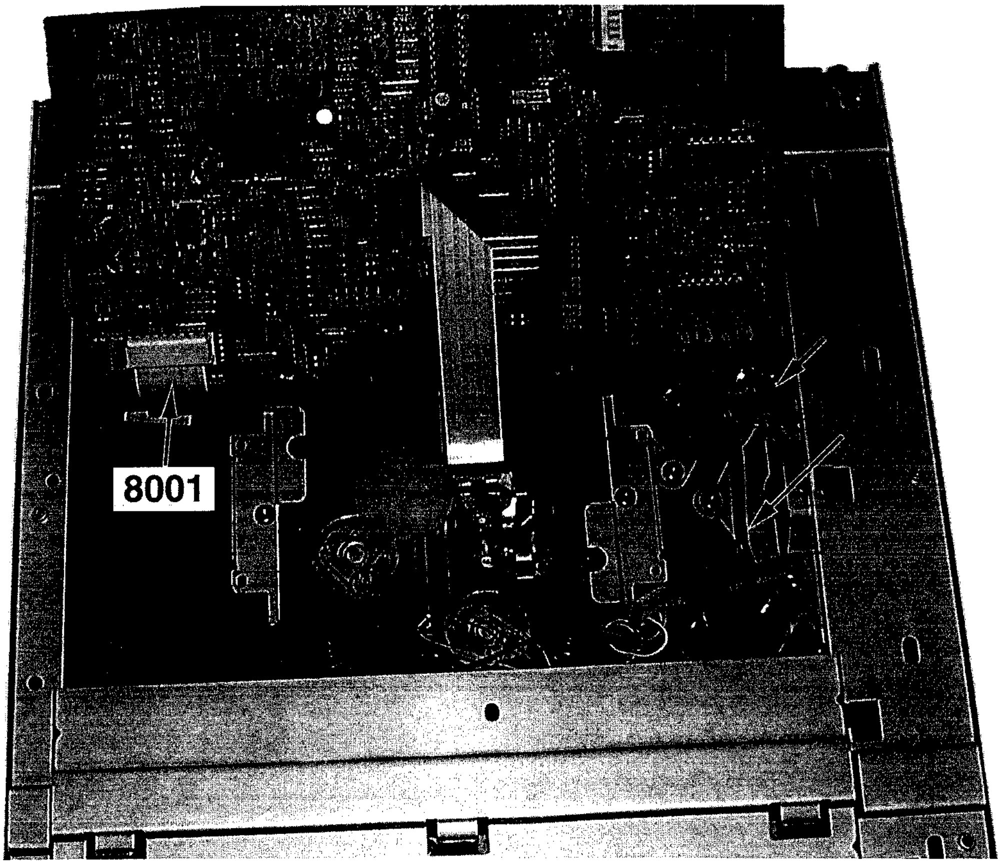

CD MECHANISM
PHOTODIODE & HF AMPLIFIER - LOADER CONTROL PCB
DISC
TURNTABLE MOTOR
FOCUS MOTOR
FOCB+
FOCB-
RADIAL MOTOR
RADB+
RADB-
SLEDGE MOTOR
SLEDGEB+
SLEDGEB-
TURNTABLE MOTOR
TTM-
TTM+
LASER & MONITOR DIODE
PHOTO DIODES
D1
D4
D2
D3
D5
INNER SWITCH
7806
TDA7073A
7807
TDA7073A
55
54
56
59
60
+5V
+3,3V
2
13
7801
LD
MON
CD R/W
Laser Control & HF AMPLIFIER
TZA1024 (TZA1025)
1
4
5
D2-D4
6,14
7
64
11
62
10
15
D1-D5
7877
SERVO - DECODER
CD10
SAA7324 (SAA7325)
FO
RA
SL
MOT1
MOT2
LD ON
V5
HF IN
D1
D2
D3
D4
R1,R2
V1
63
LP
LN
RP
RN
PORE
SILD
SCL
SDA
VCC
19
18
23
22
38
42
40
39
5,17,21,52,57
+3,3V
+10V
+5V
+5,6V
8
7851
3
2
5
15
6
7
Active low pass Filter
TDA1308
1805
18
20
23
CD LEFT
21
CD RIGHT
2
PORE
4
SILD
6
SICL
5
DATA
7874
7875
+5V
FLEX-FOIL
8001
SWITCH INFO
11
SWITCH INFO
1882
Closed if carrousel is in Position 1.
CD POS.1 SWITCH
1880
Closed if the tray is in one endposition.
Open during movement.
TRAY SWITCH
1881
CD DRIVE UP/DOWN SWITCH
7873
SHIFT REGISTER
HEF4094BT
DATA
SHR_CL
STB
VDD
EN1
O6
O5
O7
O0
O1
O2
O3
12
13
11
4
5
6
7
2
3
1
16
15
SHR_CL
STR-OUT
+10V
5V1
OE_LATCH
V
t
Power on
VDD (pin 16)
EN1 (pin 15)
7871
TDA7073A
CARROUSEL MOTOR
TRAY MOTOR

Blockdiagram 3CDC91g 81202

Wiring of CD Drive

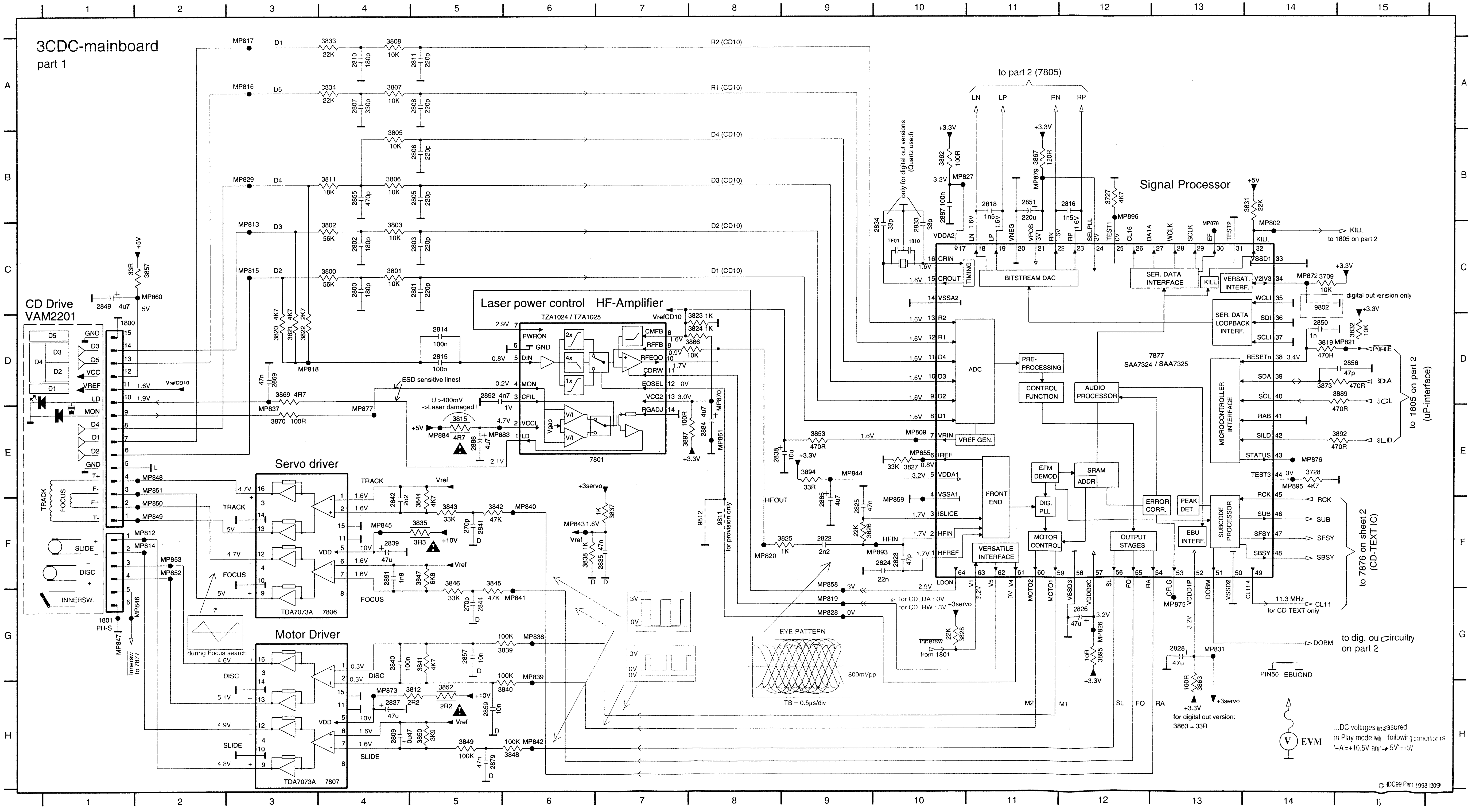

Disc Motor
Slide Motor
yellow
green
orange
black

Pict. 1



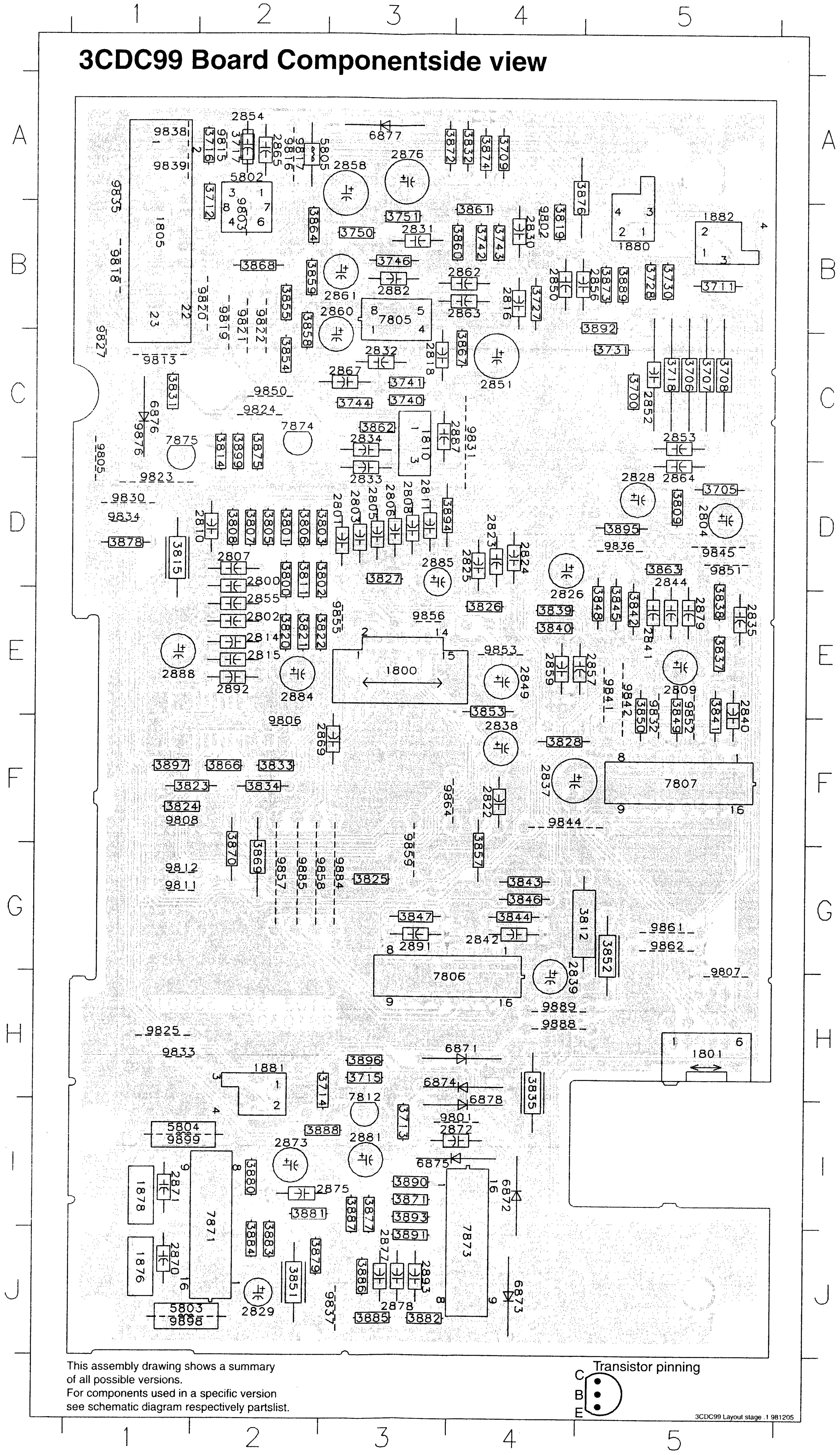
Pict. 2

1800	D2
1801	G1
1810	C10
2800	C4
2801	C5
2802	C4
2803	C5
2805	B5
2806	B5
2807	A4
2808	A5
2809	H4
2810	A4
2811	A5
2814	D5
2815	D5
2816	B12
2818	B11
2822	F9
2823	F10
2824	F10
2825	F9
2826	G12
2828	G13
2833	C10
2834	C10
2835	F7
2837	H4
2838	E8
2839	F4
2840	G4
2841	F5
2842	F4
2844	G5
2849	C1
2850	D14
2851	B11
2855	B4
2856	D15
2857	G5
2859	H5
2869	D3
2879	H5
2880	D8
2884	E8
2885	F9
2887	B10
2888	E5
2891	F4
2892	D5
3709	C14
3727	B12
3728	E14
3800	C4
3801	C4
3802	C4
3803	C4
3805	B4
3806	B4
3807	A4
3808	A4
3811	B4
3812	H5
3815	E5
3819	D14
3820	D3
3821	D3
3822	D3
3823	D8
3824	D8
3825	F9
3826	F9
3827	E10
3828	G10
3831	B14
3832	D15
3833	A4
3834	A4
3835	F5
3837	F7
3838	F6
3839	G6
3840	H6
3841	G5
3842	F5
3843	F5
3844	F5
3845	F5
3846	F5
3847	F5
3848	H6
3849	H5
3850	H5
3852	H5
3853	E9
3857	C2
3862	B10
3863	H13
3866	D8
3867	B11
3869	D3
3870	E3
3873	D14
3889	D15
3892	E15
3894	E9
3895	G12
3897	E7
7801	E7
7806	G4
7807	H4
7877	D12
9802	C14
9811	F8
9812	F8


3CDC-mainboard
part 1
CD Drive
VAM2201
1801
PH-S
TRACK
FOCUS
SLIDE
DISC
INNERSW.
Innersw
to 7877
Laser power control
HF-Amplifier
TZA1024 / TZA1025
7801
ESD sensitive lines!
U >400mV
->Laser damaged !
Servo driver
TDA7073A
7806
Motor Driver
TDA7073A
7807
during Focus search
Signal Processor
7877
SAA7324 / SAA7325
to part 2 (7805)
LN
LP
RN
RP
only for digital out versions
(Quartz used)
ADC
PRE-PROCESSING
CONTROL FUNCTION
AUDIO PROCESSOR
BITSTREAM DAC
SER. DATA INTERFACE
KILL
VERSAT. INTERF.
SER. DATA LOOPBACK INTERF.
MICROCONTROLLER INTERFACE
VREF GEN.
FRONT END
EFM DEMOD
SRAM
ADDR
DIG. PLL
MOTOR CONTROL
ERROR CORR.
PEAK DET.
EBU INTERF
SUBCODE PROCESSOR
OUTPUT STAGES
VERSATILE INTERFACE
KILL
to 1805 on part 2
digital out version only
to 1805 on part 2
(uP-interface)
to 7876 on sheet 2
(CD-TEXT IC)
11.3 MHz
for CD TEXT only
to dig. out circuitry
on part 2
for provision only
for CD DA : 0V
for CD RW : 3V
from 1801
EYE PATTERN
800mV/pp
TB = 0.5µs/div
for digital out version:
3863 = 33R
PIN50 EBUGND
EVM
...DC voltages measured
in Play mode with following conditions
'+A'=+10.5V and '+5V'=+5V
DC99 Part 19981209

CS 53 192

3CDC99 Board Componentside view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1800
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1880
1881
1882
7805
7806
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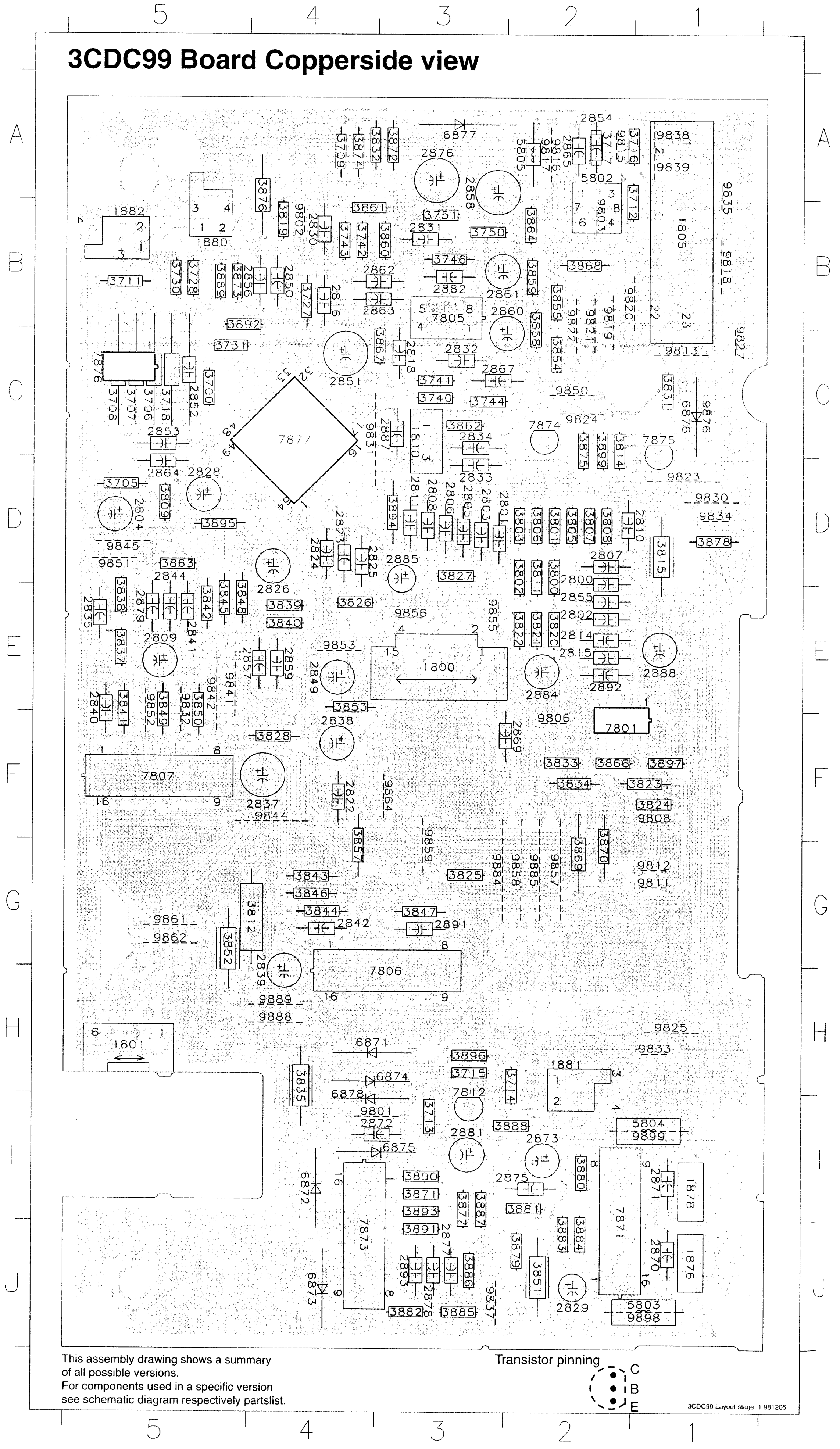
7871
7873
Transistor pinning
C
B
E
3CDC99 Layout stage 1 981205

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

Mapping

1800	E3
1801	H5
1805	B1
1810	C3
1876	J1
1878	I1
1880	B5
1881	H2
1882	B5
2800	D2
2801	D3
2802	E2
2803	D3
2804	D5
2805	D3
2806	D3
2807	D2
2808	D3
2809	E5
2810	D2
2811	D3
2814	E2
2815	E2
2816	B4
2818	C3
2822	F4
2823	D4
2824	D4
2825	D4
2826	E4
2828	D5
2829	J2
2830	B4
2831	B3
2832	C3
2833	D3
2834	C3
2835	E5
2837	F4
2838	F4
2839	H4
2840	E5
2841	E5
2842	G4
2844	D5
2849	E4
2850	B4
2851	C4
2852	C5
2853	C5
2854	A2
2855	E2
2856	B5
2857	E5
2858	A3
2859	E4
2860	B3
2861	B3
2862	B4
2863	B4
2864	D5
2865	A2
2867	C3
2869	F2
2870	J1
2871	I1
2872	I4
2873	I2
2875	I3
2876	A3
2877	J3
2878	J3
2879	E5
2881	I3
2882	B3
2884	E2
2885	D3
2887	C4
2888	E1
2891	G3
2892	E2
2893	J3
3700	C5
3705	D5
3706	C5
3707	C5
3708	C5
3709	A4
3711	B5
3712	B2
3713	I3
3714	H3
3715	H3
3716	A2
3717	A2
3718	C5
3727	B4
3728	B5
3730	B5
3731	C5
3740	C3
3741	C3
3742	B4
3743	B4
3744	C3
3746	B3
3750	B3
3751	B3
3800	D2
3801	D2
3802	D2
3803	D2
3805	D2
3806	D2
3807	D2
3808	D2
3809	D5
3811	D2
3812	G5
3814	C2
3815	D1
3819	B4
3820	E2
3821	E2
3822	E2
3823	F1
3824	F1
3825	G3
3826	E4
3827	D3
3828	F4
3831	C1
3832	A4
3833	F2
3834	F2
3835	H4
3837	E5
3838	E5
3839	E4
3840	E4
3841	E5
3842	E5
3843	G4
3844	G4
3845	E5
3846	G4
3847	G3
3848	E5
3849	E5
3850	E5
3851	J2
3852	G5
3853	E4
3854	C2
3855	B2
3857	G4
3858	C2
3859	B2
3860	B4
3861	B4
3862	C3
3863	D5
3864	B2
3866	F2
3867	C4
3868	B2
3869	G2
3870	G2
3871	I3
3872	A3
3873	B5
3874	A4
3875	C2
3876	A4
3877	I3
3878	D1
3879	J2
3880	I2
3881	I2
3882	J3
3883	J2
3884	J2
3885	J3
3886	J3
3887	I3
3888	I3
3889	B5
3890	I3
3891	J3
3892	B5
3893	I3
3894	D3
3895	D5
3896	H3
3897	F1
3899	C2
5802	A2
5803	J1
5804	I1
5805	A2
6871	H4
6872	I4
6873	J4
6874	H3
6875	I3
6876	C1
6877	A3
6878	H4
7801	F1
7805	B3
7806	H3
7807	F5
7812	H3
7871	J2
7873	J4
7874	C2
7875	C1
7876	C5
7877	C4
9801	I4
9802	B4
9803	B2
9805	D1
9806	F2
9807	G5
9808	F1
9811	G1
9812	G1
9813	C1
9815	A2
9816	A2
9817	A2
9818	B1
9819	B2
9820	B2
9821	B2
9822	B2
9823	D1
9824	C2
9825	H1
9827	C1
9830	D1
9831	C4
9832	E5
9833	H1
9834	D1
9835	A1
9836	D5
9837	J3
9838	A1
9839	A1
9841	E5
9842	E5
9844	F4
9845	D5
9850	C2
9851	D5
9852	E5
9853	E4
9855	E3
9856	E3
9857	G2
9858	G2
9859	G3
9861	G5
9862	G5
9864	F3
9876	C1
9884	G3
9885	G2
9888	H4
9889	H4
9898	J1
9899	I1

3CDC99 Board Copperside view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1800
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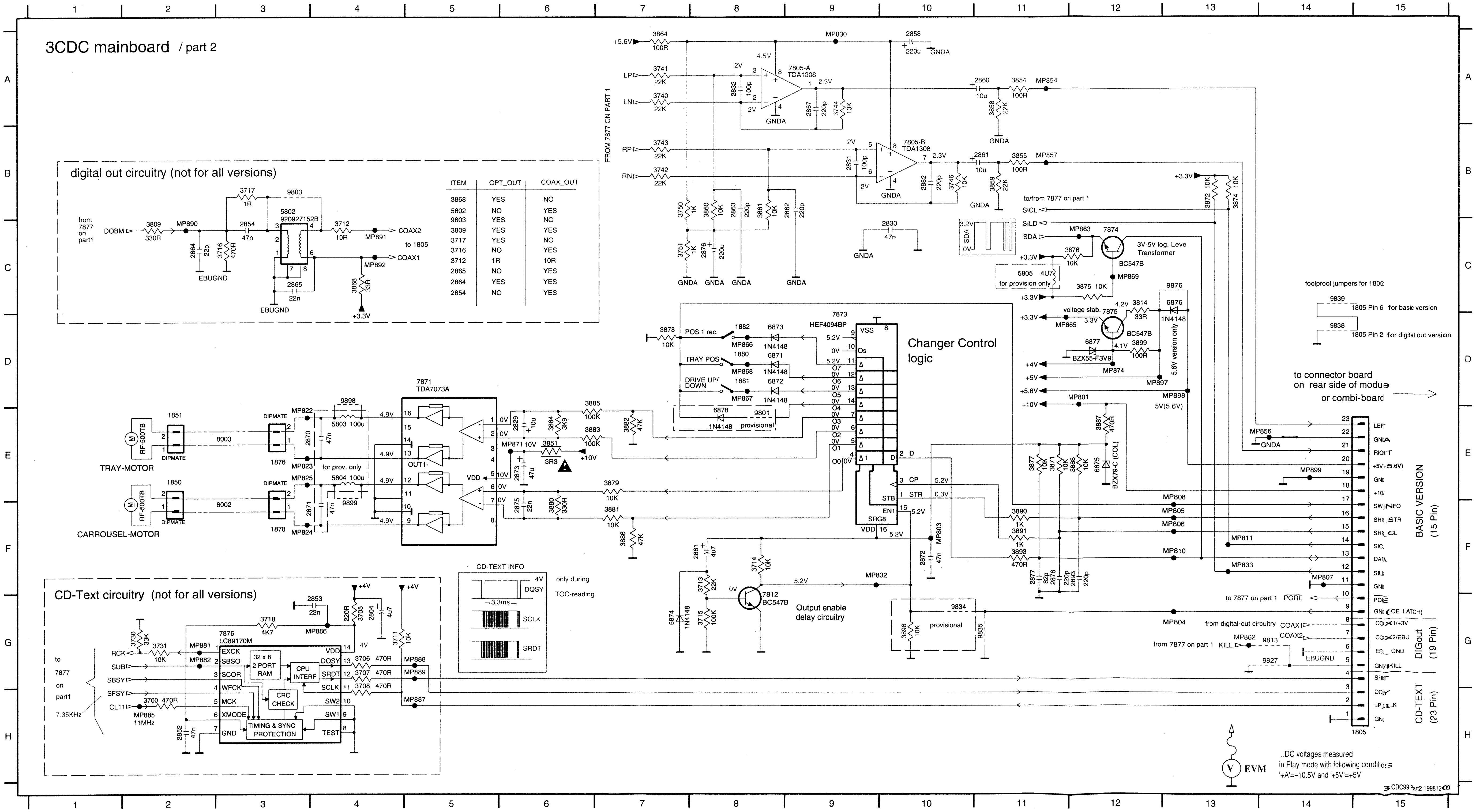
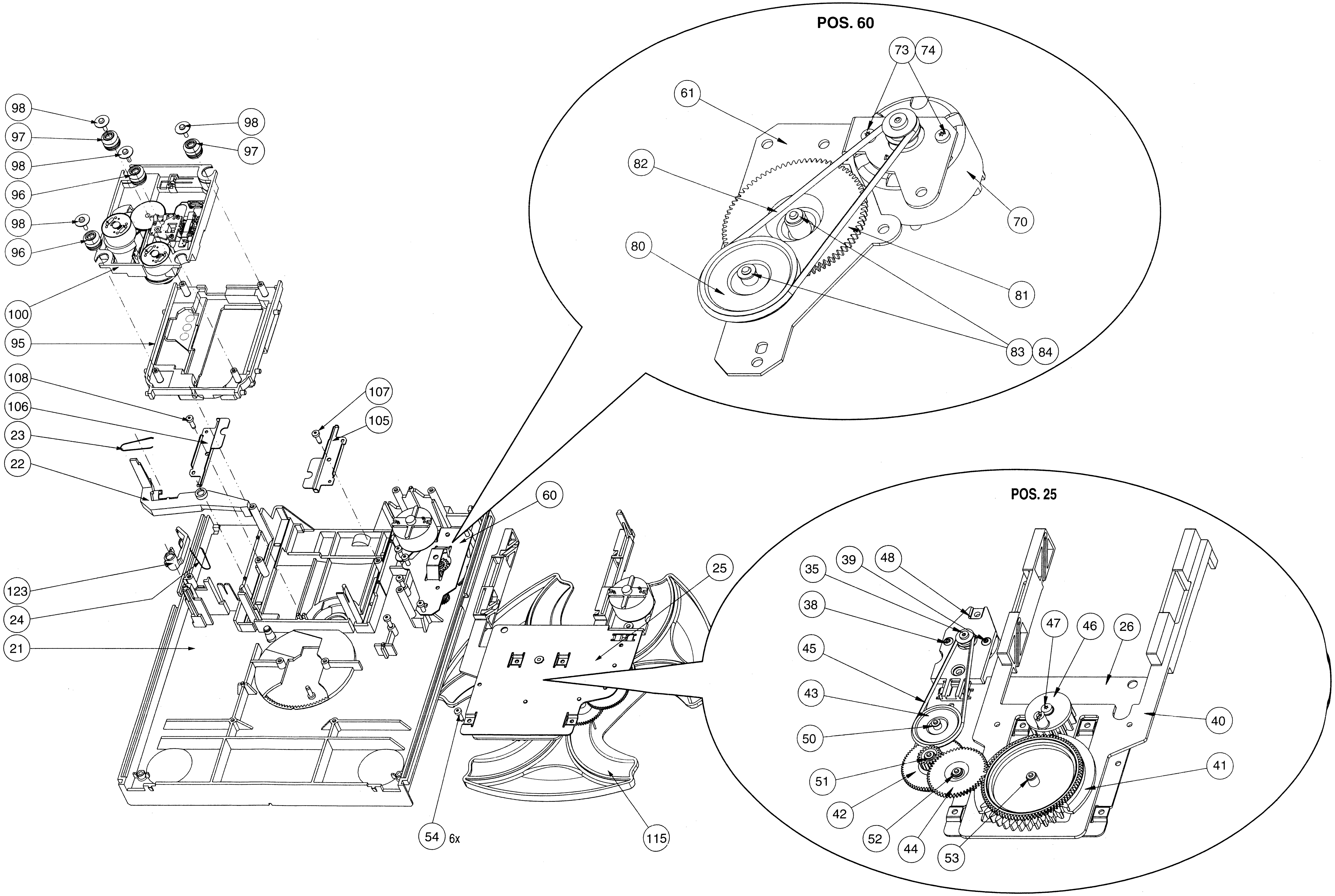
7801
7805
7806
7807
7871
7873
7877
Transistor pinning
C
B
E
3CDC99 Layout stage 1 981205

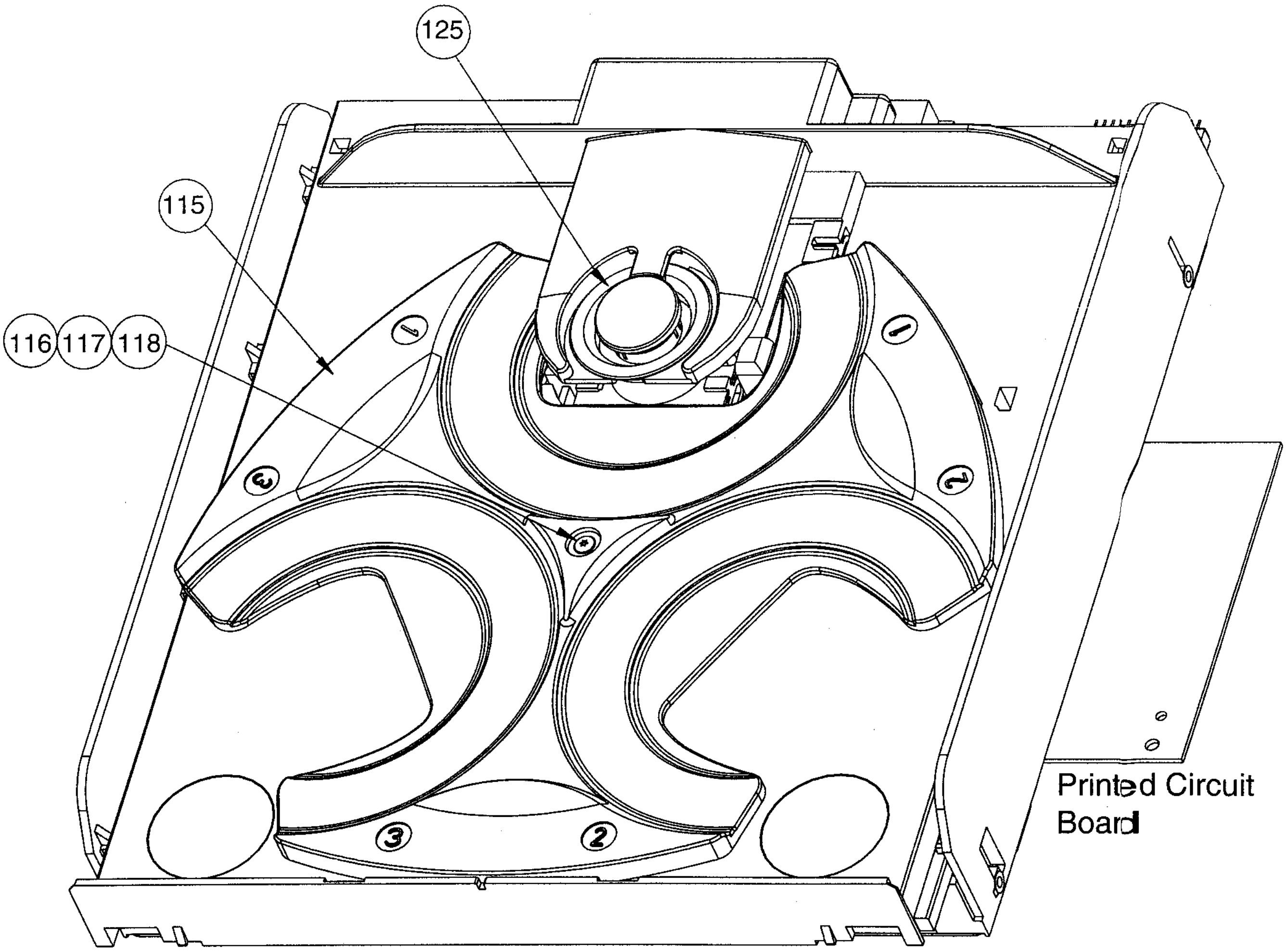
This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

1805	H14
1876	E3
1878	F3
1880	D8
1881	D8
1882	D8
2804	G4
2829	E6
2830	C10
2831	B9
2832	A8
2852	H2
2853	G4
2854	C3
2858	A10
2860	A11
2861	B11
2862	B8
2863	B8
2864	C2
2865	C3
2867	A9
2870	E3
2871	F4
2872	F10
2873	E6
2875	F6
2876	C8
2877	F11
2878	F11
2881	F8
2882	B10
2893	F12
3700	H2
3705	G4
3706	G4
3707	G4
3708	H4
3711	G4
3712	C4
3713	F8
3714	F8
3715	G8
3716	C3
3717	B3
3718	G3
3730	G2
3731	G2
3740	A7
3741	A7
3742	B7
3743	B7
3744	A9
3746	B10
3750	B7
3751	C7
3809	C2
3814	C12
3851	E6
3854	A11
3855	B11
3858	A11
3859	B11
3860	B8
3861	B8
3864	A7
3868	C4
3871	E11
3872	B13
3874	B13
3875	C12
3876	C12
3877	E11
3878	D7
3879	E7
3880	F6
3881	F7
3882	E7
3883	E6
3884	E6
3885	D6
3886	F7
3887	E12
3888	E12
3890	F11
3891	F11
3893	F11
3896	G10
3899	D12
5802	B3
5803	E4
5804	E4
5805	C11
6871	D8
6872	D8
6873	D8
6874	G7
6875	E12
6876	C13
6877	D12
6878	E8
7805-A	A9
7805-B	B10
7812	G8
7871	D5
7873	D9
7874	C12
7875	D12
7876	G3
9801	E8
9803	B3
9813	G14
9827	G14
9834	G10
9835	G11
9838	D14
9839	C14
9876	C13
9898	D4
9899	E4


3CDC mainboard / part 2
digital out circuitry (not for all versions)
from 7877 on part1
DOBM
3809 330R
MP890
3717 1R
9803
2854 47n
5802 920927152B
3712 10R
MP891
COAX2
to 1805
COAX1
MP892
2864 22p
3716 470R
EBUGND
2865 22n
3868 33R
+3.3V
FROM 7877 ON PART 1
+5.6V
3864 100R
MP830
2858 220u
GNDA
LP
3741 22K
LN
3740 22K
7805-A TDA1308
7805-B TDA1308
RP
3743 22K
RN
3742 22K
2860 10u
3854 100R
MP854
2861 10u
3855 100R
MP857
3858 22K
3859 22K
2830 47n
to/from 7877 on part 1
SICL
SILD
SDA
MP863
7874
3V-5V log. Level Transformer
BC547B
MP869
3876 10K
5805 4U7
for provision only
3875 10K
9876
voltage stab. 7875
3814 33R
6876 1N4148
MP865
6877 BZX55-F3V9
3899 100R
MP874
5.6V version only
MP897
MP898
5V(5.6V)
MP801
+4V
+5V
+5.6V
+10V
3872 10K
3874 10K
foolproof jumpers for 1805
9839
1805 Pin 6 for basic version
9838
1805 Pin 2 for digital out version
to connector board on rear side of module or combi-board
3878 10K
POS 1 rec.
1882
6873 1N4148
MP866
TRAY POS
1880
6871 1N4148
MP868
DRIVE UP/ DOWN
1881
6872 1N4148
MP867
6878 1N4148
9801 provisional
7873 HEF4094BP
Changer Control logic
STB
EN1
SRG8
CP
STR
MP803
7871 TDA7073A
OUT1-
VDD
3885 100K
3883 100K
3882 47K
3884 3K9
3851 3R3
MP871
3879 10K
3881 10K
3886 47K
3880 330R
2875 22n
2873 47u
2829 10u
1851
RF-500TB
DIPMATE
8003
TRAY-MOTOR
1850
8002
CARROUSEL-MOTOR
MP822
MP823
MP825
MP824
1876
1878
9898
5803 100u
5804 100u
9899
for prov. only
2870 47n
2871 47n
3887 470R
6875 BZX79-C (COL)
3877 10K
3871 10K
3888 10K
3890 1K
3891 1K
3893 470R
MP808
MP805
MP806
MP810
MP811
MP833
MP807
MP856
MP899
2881 4u7
3714 10K
3713 22K
3715 100K
6874 1N4148
7812 BC547B
Output enable delay circuitry
MP832
2872 47n
9834
3896 10K
provisional
9835
MP804
to 7877 on part 1 PORE
from digital-out circuitry COAX1 COAX2
MP862
9813
from 7877 on part 1 KILL
9827
EBUGND
1805
LEFT
GNDA
RIGHT
+5V(5.6V)
GND
+10V
SWINFO
SHIFT_STR
SHIFT_CL
SICL
DATA
SILD
GND
PORE
GND (OE_LATCH)
COAX1/+3V
COAX2/EBU
EBU_GND
GND/KILL
SRDT
DQSY
uP_CLK
GND
BASIC VERSION (15 Pin)
DIGout (19 Pin)
CD-TEXT (23 Pin)
CD-Text circuitry (not for all versions)
to 7877 on part1
7.35KHz
RCK
SUB
SBSY
SFSY
CL11
3730 33K
3731 10K
3700 470R
MP885 11MHz
MP881
MP882
7876 LC89170M
3718 4K7
MP886
2853 22n
3705 220R
2804 4u7
3711 10K
+4V
EXCK
SBSO
SCOR
WFCK
MCK
XMODE
GND
32 x 8 2 PORT RAM
CPU INTERF
CRC CHECK
TIMING & SYNC PROTECTION
VDD
DQSY
SRDT
SCLK
SW2
SW1
TEST
3706 470R
3707 470R
3708 470R
MP888
MP889
MP887
2852 47n
CD-TEXT INFO
only during TOC-reading
3.3ms
...DC voltages measured in Play mode with following conditions: '+A'=+10.5V and '+5V'=+5V
EVM
3CDC99 Part2 19981209

ITEM	OPT_OUT	COAX_OUT
3868	YES	NO
5802	NO	YES
9803	YES	NO
3809	YES	YES
3717	YES	NO
3716	NO	YES
3712	1R	10R
2865	NO	YES
2864	YES	YES
2854	NO	YES


POS. 60
54 6x
POS. 25



MECHANICAL PARTSLIST 3CDC-99 MODULE

	4822 390 10136	POLYLUB GLY801 (GREASE)	43	4822 528 10937	PULLEY
3	4822 463 11008	GUIDE LEFT	44	4822 522 10493	IDLER WHEEL
4	4822 463 11009	GUIDE RIGHT	45	4822 358 10115	BELT
21	4822 441 11615	DRAWER	46	4822 466 10735	ECCENTRIC GEAR WHEEL
22	4822 402 10088	BRACKET TUMBLER	50	4822 532 12364	WASHER
38	4822 502 12548	SCREW M2,6X3,5	51	4822 532 12364	WASHER
39	4822 502 12548	SCREW M2,6X3,5	52	4822 532 12364	WASHER
40	4822 463 11011	SLIDE	53	4822 532 12364	WASHER
41	4822 522 10509	CONTROL DISC	35	4822 361 10753	CARROUSEL MOTOR
42	4822 522 10492	GEAR WHEEL	70	4822 361 10753	CARROUSEL MOTOR

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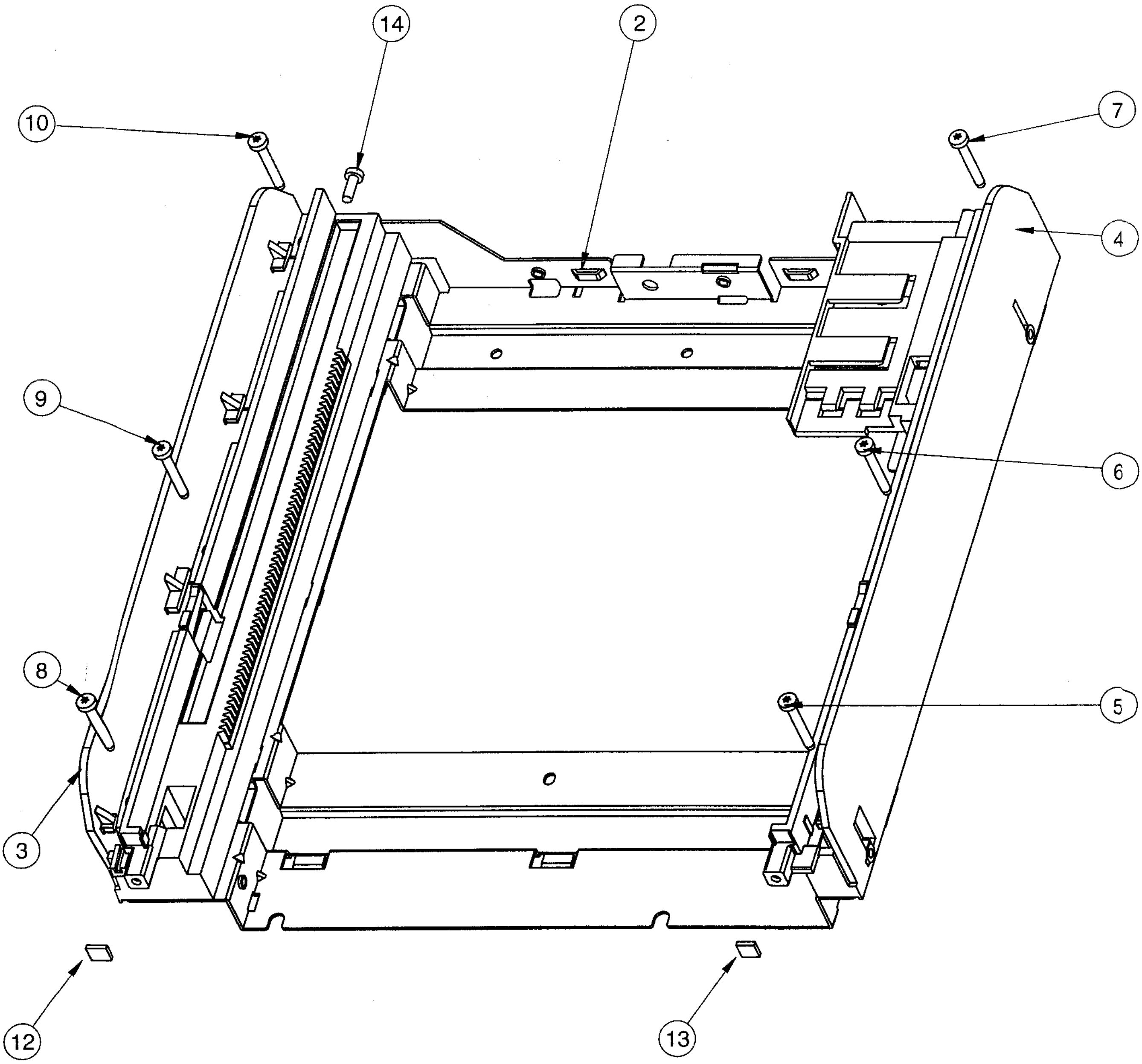


MECHANICAL PARTSLIST 3CDC-99 MODULE

73	4822 502 12548	SCREW M2,6X3,5	100	4822 691 10772	CD DRIVE VAM2201
74	4822 502 12548	SCREW M2,6X3,5	115	4822 466 10736	CARROUSEL
80	4822 528 10937	PULLEY	117	4822 532 12365	BUSH DRAWER
81	4822 522 10494	GEAR DRAWER	123	4822 402 11237	SWITCH BRACKET
82	4822 358 10115	BELT	125	4822 401 11708	DISC CLAMP
83	4822 532 12364	WASHER			
84	4822 532 12364	WASHER			
95	4822 404 10895	SUPPORT			
96	4822 529 10431	SUSPENSION			
97	4822 529 10431	SUSPENSION			

ELECTRICAL PARTSLIST 3CDC-99 MODULE

MISCELLANEOUS

1800	4822 265 10925	FLEX FOIL CONNECTOR 15PIN
1805	4822 265 11533	FLEX FOIL CONNECTOR 23PIN
1805	4822 267 51322	FLEX FOIL CONNECTOR 15 PIN
1880	4822 276 13503	SWITCH
1881	4822 276 13503	SWITCH
1882	4822 276 13503	SWITCH

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 124 40246	4,7µF	20%	63V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12787	330pF	10%	50V
2808	4822 122 10466	220pF	10%	50V
2809	5322 124 41948	0,47µF	20%	50V
2810	4822 126 10053	180pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2814	4822 126 12785	47nF	20%	50V
2815	4822 126 12882	100nF	20%	50V
2816	4822 126 12878	1,5nF	10%	16V
2818	4822 126 12878	1,5nF	10%	16V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12785	47nF	20%	50V
2826	4822 124 80231	47µF	20%	16V
2828	4822 124 40433	47µF	20%	25V
2829	4822 124 21732	10µF	20%	25V
2830	4822 126 12785	47nF	20%	50V
2831	4822 122 33195	100pF	10%	50V
2832	4822 122 33195	100pF	10%	50V
2833	4822 122 33069	33pF	5%	50V
2834	4822 122 33069	33pF	5%	50V
2835	4822 126 12785	47nF	20%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 41579	10µF	20%	50V
2839	4822 124 40433	47µF	20%	25V
2840	4822 126 12882	100nF	20%	50V
2841	4822 126 12702	270pF	10%	50V
2842	4822 126 12339	2,2nF	10%	16V
2844	4822 126 12702	270pF	10%	50V
2849	4822 124 40246	4,7µF	20%	63V
2850	4822 122 33197	1nF	10%	50V
2851	4822 124 40196	220µF	20%	16V
2852	4822 126 12785	47nF	20%	50V
2853	4822 126 11585	22nF	20%	50V
2854	4822 126 12785	47nF	20%	50V
2855	4822 122 33519	470pF	10%	50V
2856	4822 122 33848	47pF	5%	50V
2857	4822 121 51387	10nF	20%	16V
2858	4822 124 40196	220µF	20%	16V
2859	4822 121 51387	10nF	20%	16V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V
2862	4822 122 10466	220pF	10%	50V
2863	4822 122 10466	220pF	10%	50V
2864	4822 122 33191	22pF	5%	50V
2865	4822 126 11585	22nF	20%	50V
2867	4822 122 10466	220pF	10%	50V
2869	4822 126 12785	47nF	20%	50V

CAPACITORS

2872	4822 126 12785	47nF	20%	50V
2873	4822 124 12233	47µF	20%	25V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 40196	220µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 126 12785	47nF	20%	50V
2882	4822 122 10466	220pF	10%	50V
2884	4822 124 40246	4,7µF	20%	63V
2885	4822 124 40246	4,7µF	20%	63V
2887	4822 126 12882	100nF	20%	50V
2888	4822 124 40246	4,7µF	20%	63V
2891	4822 122 10576	1,8nF	10%	16V
2892	4822 126 11714	4,7nF	20%	16V
2893	4822 122 10466	220pF	10%	50V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 83872	220Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3709	4822 116 83864	10kΩ	5%	0,5W
3711	4822 116 83864	10kΩ	5%	0,5W
3712	4822 116 52176	10Ω	5%	0,5W
3713	4822 116 52257	22kΩ	5%	0,5W
3714	4822 116 83864	10kΩ	5%	0,5W
3715	4822 116 52234	100kΩ	5%	0,5W
3716	4822 116 83883	470Ω	5%	0,16W
3718	4822 116 52283	4,7kΩ	5%	0,5W
3727	4822 116 52283	4,7kΩ	5%	0,5W
3728	4822 116 52283	4,7kΩ	5%	0,5W
3730	4822 116 52271	33kΩ	5%	0,16W
3731	4822 116 83864	10kΩ	5%	0,5W
3740	4822 116 52257	22kΩ	5%	0,5W
3741	4822 116 52257	22kΩ	5%	0,5W
3742	4822 116 52257	22kΩ	5%	0,5W
3743	4822 116 52257	22kΩ	5%	0,5W
3744	4822 116 83864	10kΩ	5%	0,5W
3746	4822 116 83864	10kΩ	5%	0,5W
3750	4822 050 11002	1kΩ	5%	0,2W
3751	4822 050 11002	1kΩ	5%	0,2W
3800	4822 116 52291	56kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52291	56kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3809	4822 116 83876	270Ω	5%	0.16W
3811	4822 116 52251	18kΩ	5%	0,5W
3812	4822 053 10228	2,2Ω	5%	1W
3814	4822 116 52191	33Ω	5%	0,5W
3815	4822 052 10478	4,7Ω	5%	NFR
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52283	4,7kΩ	5%	0,5W
3821	4822 116 52283	4,7kΩ	5%	0,5W
3822	4822 116 52249	1,8kΩ	5%	0,16W
3823	4822 050 11002	1kΩ	5%	0,2W
3824	4822 050 11002	1kΩ	5%	0,2W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52271	33kΩ	5%	0,16W

ELECTRICAL PARTSLIST 3CDC-99 MODULE

RESISTORS

3828	4822 116 52257	22kΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83864	10kΩ	5%	0,5W
3833	4822 116 52257	22kΩ	5%	0,5W
3834	4822 116 52257	22kΩ	5%	0,5W
3835	4822 052 10338	3,3Ω		NFR25
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52234	100kΩ	5%	0,5W
3840	4822 116 52234	100kΩ	5%	0,5W
3841	4822 116 52283	4,7kΩ	5%	0,5W
3842	4822 116 83884	47kΩ	5%	0,16W
3843	4822 116 52271	33kΩ	5%	0,16W
3844	4822 116 52283	4,7kΩ	5%	0,5W
3845	4822 116 83884	47kΩ	5%	0,16W
3846	4822 116 52271	33kΩ	5%	0,16W
3847	4822 116 83961	6,8kΩ	5%	0,16W
3848	4822 116 52234	100kΩ	5%	0,5W
3849	4822 116 52234	100kΩ	5%	0,5W
3850	4822 116 52276	3,9kΩ	5%	0,5W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10228	2,2Ω	5%	0,33W
3853	4822 116 83883	470Ω	5%	0,16W
3854	4822 116 52175	100Ω	5%	0,5W
3855	4822 116 52175	100Ω	5%	0,5W
3857	4822 116 52191	33Ω	5%	0,5W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83864	10kΩ	5%	0,5W
3861	4822 116 83864	10kΩ	5%	0,5W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52191	33Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3866	4822 116 83864	10kΩ	5%	0,5W
3867	4822 116 83868	150Ω	5%	0,5W
3869	4822 050 24708	4,7Ω	1%	0,6W
3870	4822 116 52175	100Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83864	10kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W
3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 116 83883	470Ω	5%	0,16W
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 050 11002	1kΩ	5%	0,2W
3891	4822 050 11002	1kΩ	5%	0,2W
3892	4822 116 83883	470Ω	5%	0,16W
3893	4822 116 83883	470Ω	5%	0,16W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3897	4822 116 52175	100Ω	5%	0,5W
3899	4822 116 52175	100Ω	5%	0,5W

COILS

1810	4822 242 10849	QUARTZ 8,46MHz
1810	4822 242 73557	CERAMIC RES. 8,46MHz
5802	4822 156 31058	FILTER DIGITAL OUT

DIODES

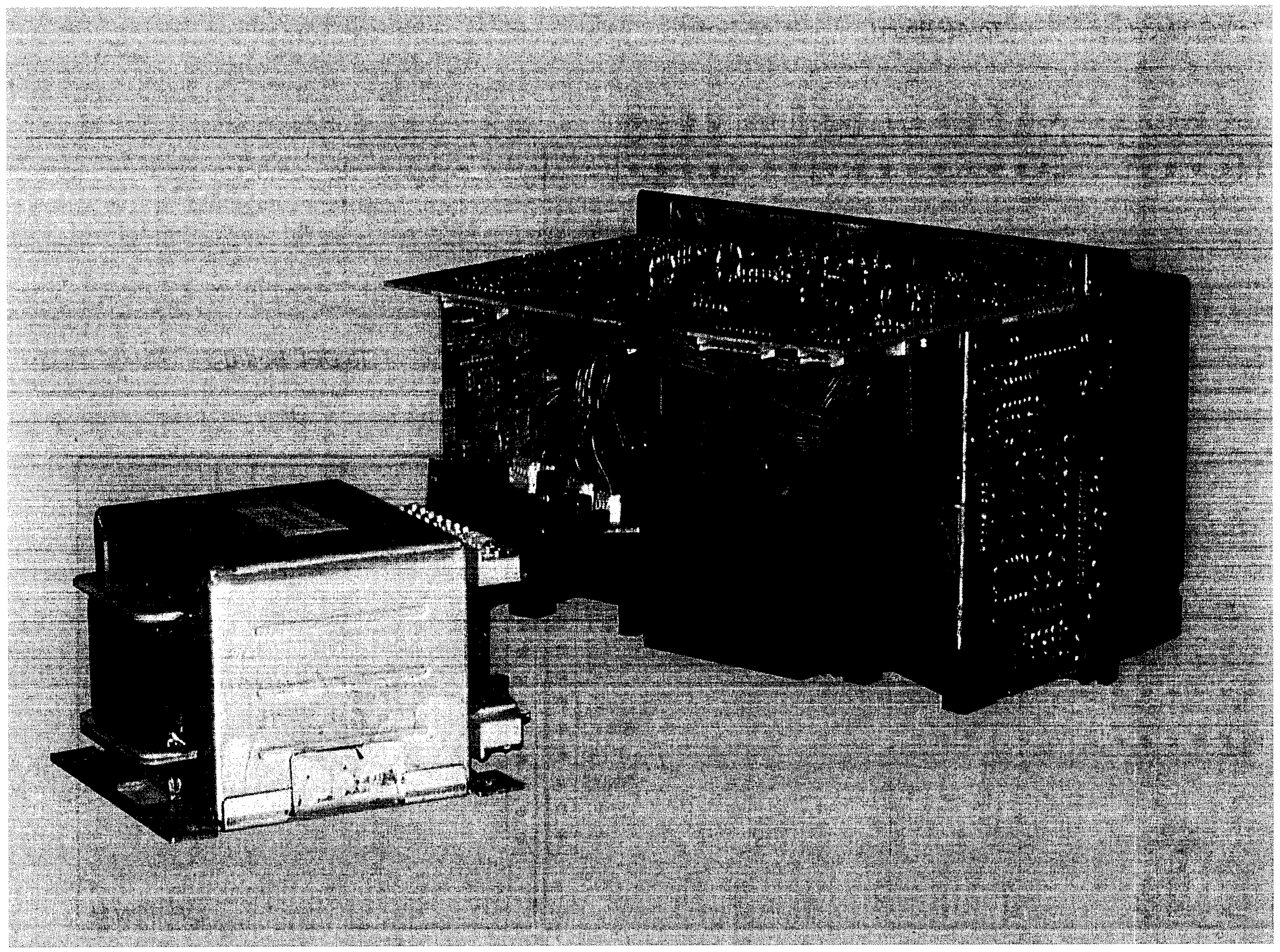
6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1
6877	4822 130 31981	BZX79-C3V9

TRANSISTORS

7812	4822 130 40959	BC547B
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7801 ©	4822 209 17286	TZA1024T/N1 HF-AMPLIFIER
7805	4822 209 17284	TDA1308 OPAMP
7806	4822 209 32852	TDA7073A/N2 SERVO DRIVER
7807	4822 209 32852	TDA7073A/N2 MOTOR DRIVER
7871	4822 209 32852	TDA7073A/N2 MOTOR DRIVER
7873	5322 209 10421	HEF4094BP SHIFT REGISTER
7876 ©	4822 209 16143	LC89170M CD TEXT
7877 ©	4822 209 17285	SAA7324H/M1 SIGNAL PROCESSOR



POWER 5-VA Module

(70 / 100W Version)

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Component layout Supply part and L/R Amplifier part 11-6
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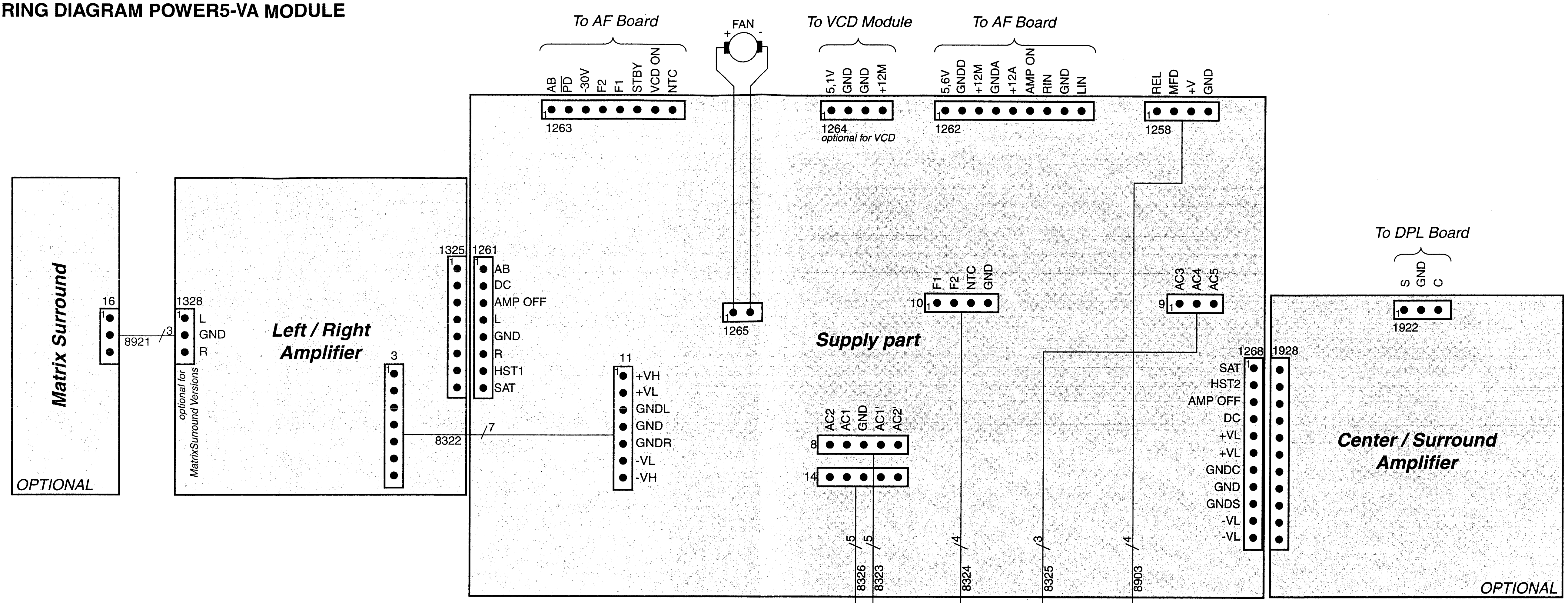
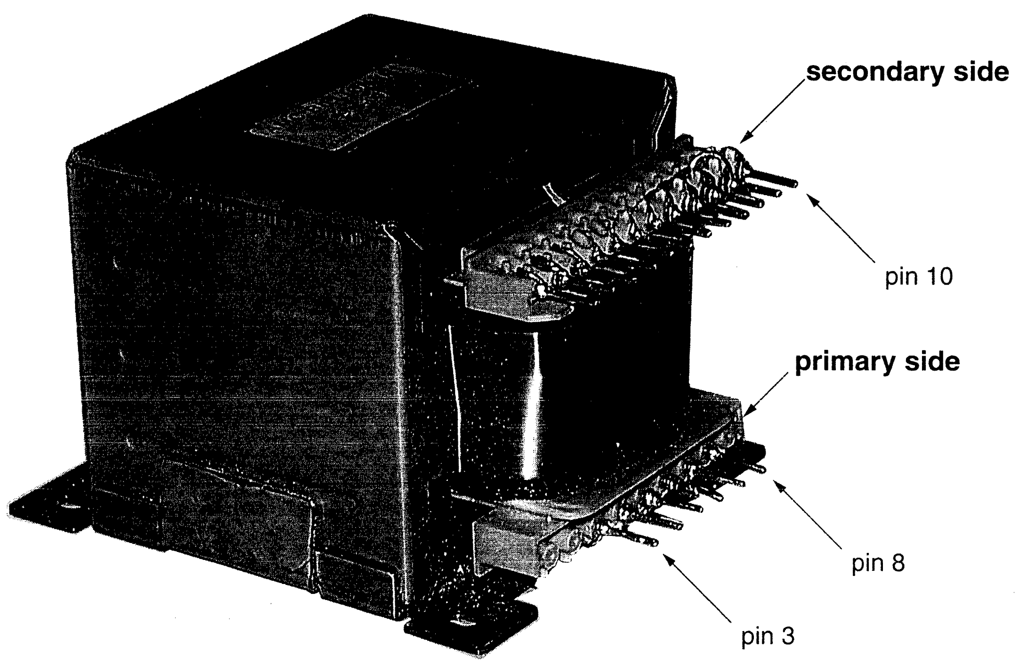
Partslist 11-9ff

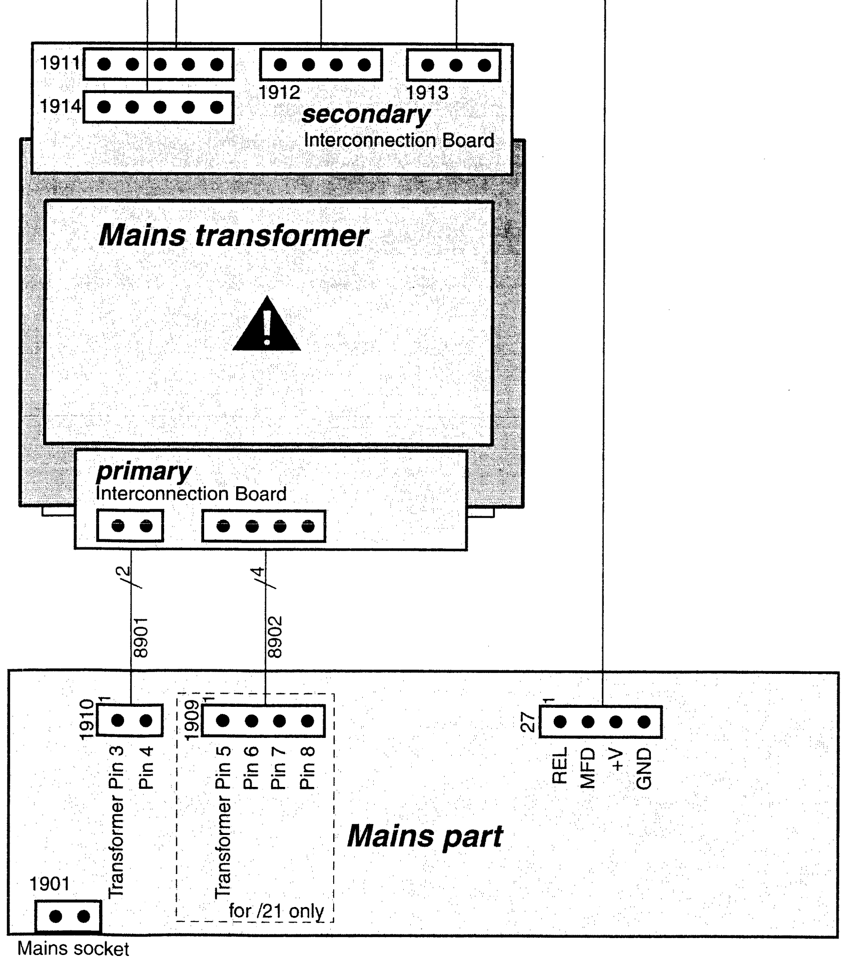
Technical remarks

WIRING DIAGRAM POWER5-VA MODULE

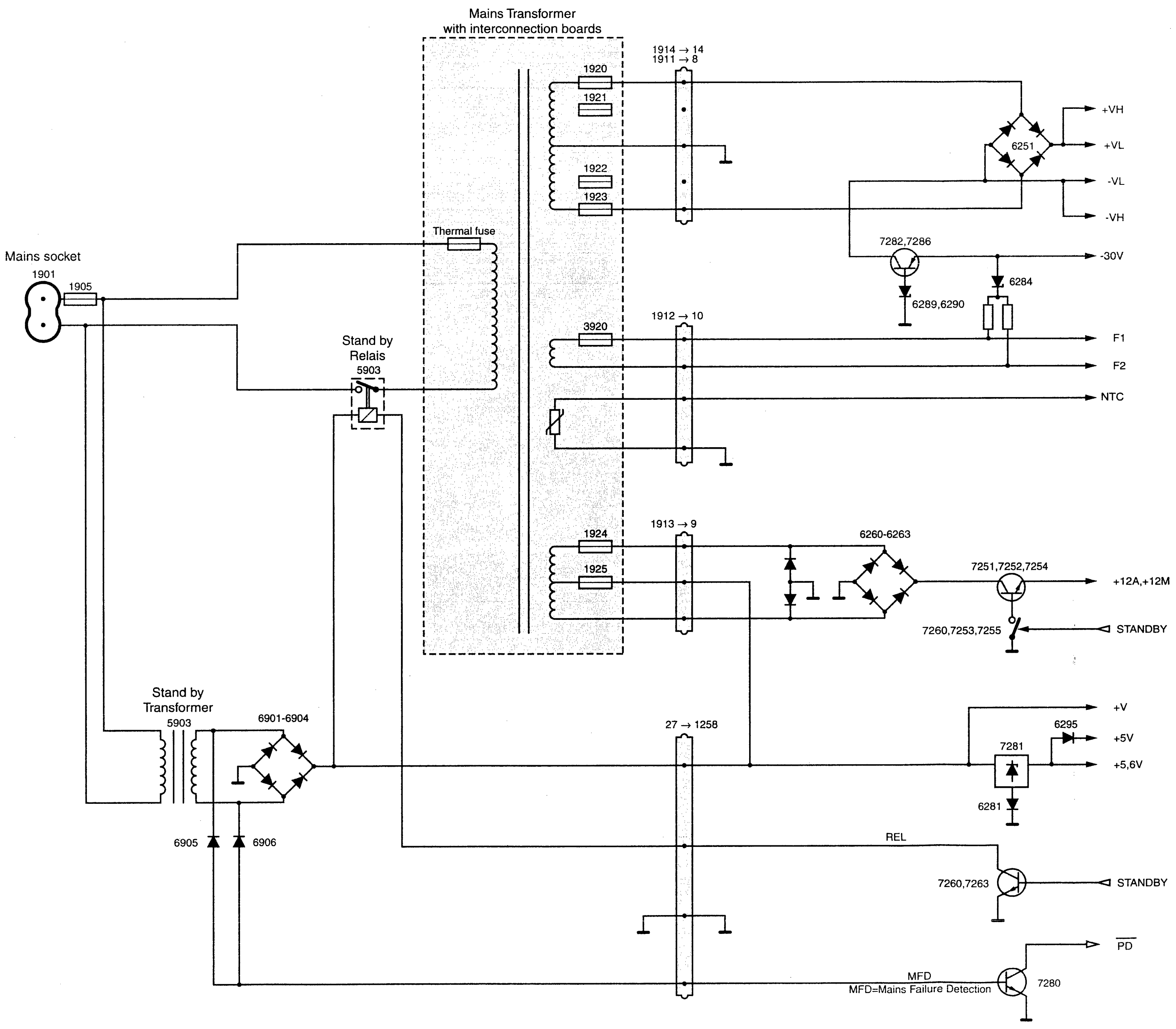

To AF Board
AB
PD
-30V
F2
F1
STBY
VCD ON
NTC
1263
FAN
+
-
To VCD Module
5,1V
GND
GND
+12M
1264
optional for VCD
To AF Board
5,6V
GNDD
+12M
GNDA
+12A
AMP ON
RIN
GND
LIN
1262
REL
MFD
+V
GND
1258
Matrix Surround
OPTIONAL
16
8921
3
1328
L
GND
R
optional for MatrixSurround Versions
Left / Right Amplifier
3
8322
7
1325
1261
AB
DC
AMP OFF
L
GND
R
HST1
SAT
11
+VH
+VL
GNDL
GND
GNDR
-VL
-VH
1265
Supply part
10
F1
F2
NTC
GND
9
AC3
AC4
AC5
8
AC2
AC1
GND
AC1'
AC2'
14
5
5
4
3
4
8326
8323
8324
8325
8903
1268
1928
SAT
HST2
AMP OFF
DC
+VL
+VL
GNDC
GND
GNDS
-VL
-VL
To DPL Board
S
GND
C
1922
Center / Surround Amplifier
OPTIONAL

Mains Transformer /21


secondary side
pin 10
primary side
pin 8
pin 3

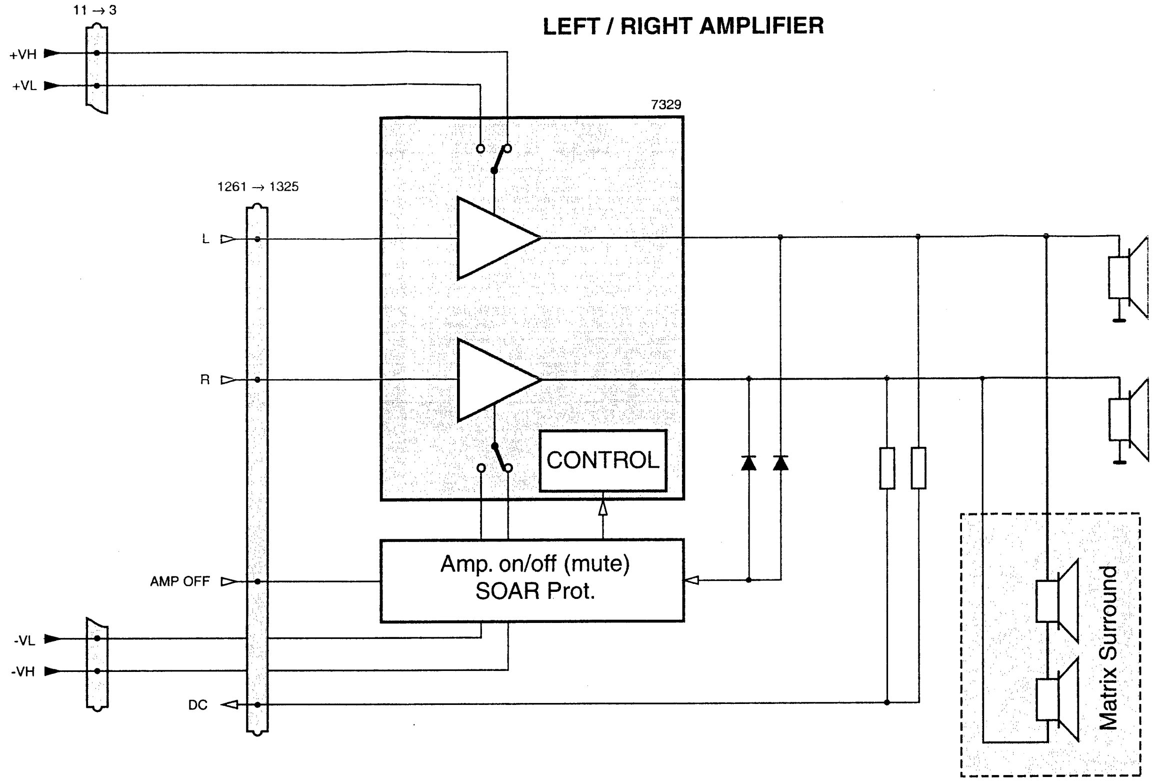

1911
1914
1912
1913
secondary
Interconnection Board
Mains transformer
primary
Interconnection Board
2
4
8901
8902
1910
Transformer Pin 3
Pin 4
1909
Transformer Pin 5
Pin 6
Pin 7
Pin 8
for /21 only
27
REL
MFD
+V
GND
Mains part
1901
Mains socket

BLOCK DIAGRAM 70/100W VERSION



SUPPLY PART

Mains Transformer
with interconnection boards
Mains socket
1901
1905
Thermal fuse
Stand by
Relais
5903
1920
1921
1922
1923
3920
1924
1925
1914 → 14
1911 → 8
1912 → 10
1913 → 9
27 → 1258
6251
+VH
+VL
-VL
-VH
7282,7286
-30V
6284
6289,6290
F1
F2
NTC
6260-6263
7251,7252,7254
+12A,+12M
7260,7253,7255
STANDBY
Stand by
Transformer
5903
6901-6904
6905
6906
+V
6295
+5V
7281
+5,6V
6281
REL
7260,7263
STANDBY
PD
MFD
MFD=Mains Failure Detection
7280

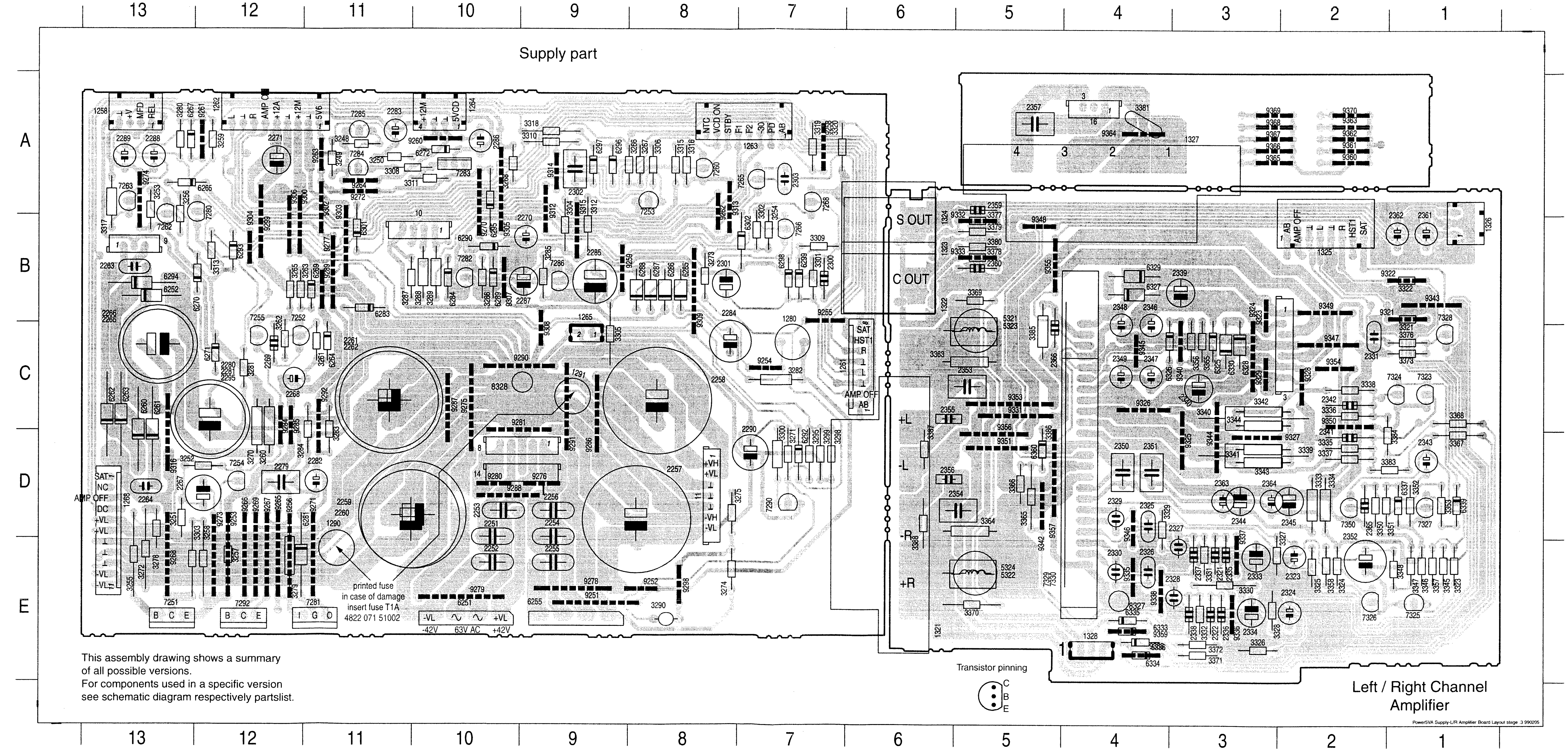


LEFT / RIGHT AMPLIFIER

11 → 3
+VH
+VL
7329
1261 → 1325
L
R
CONTROL
AMP OFF
Amp. on/off (mute)
SOAR Prot.
-VL
-VH
DC
Matrix Surround

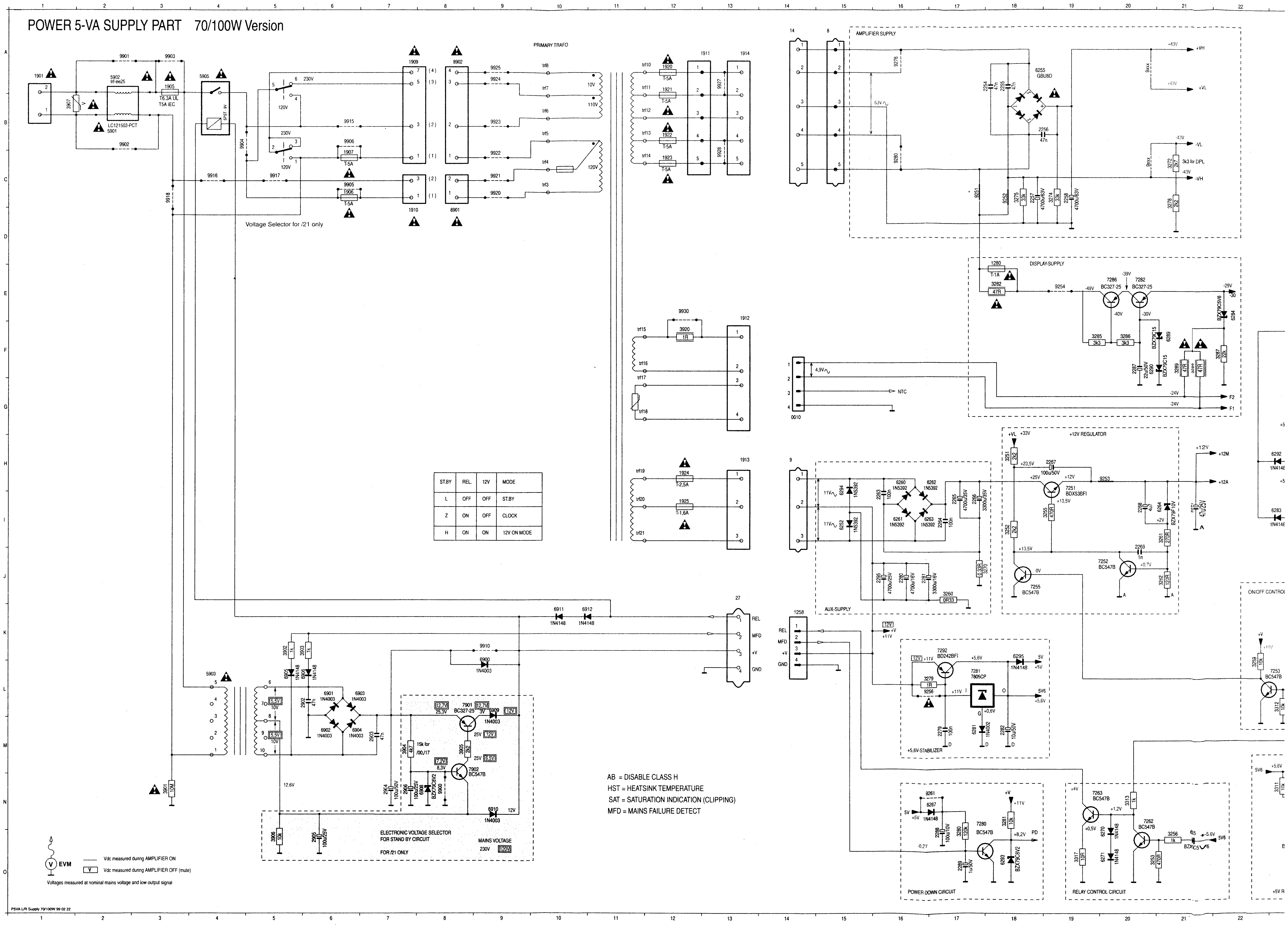
COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

3 C 2
1321 D 6
1322 B 6
1323 B 6
1324 B 6
1325 B 2
1326 B 1
1328 E 4
2321 E 3
2322 E 3
2323 E 2
2324 E 2
2325 D 4
2326 E 4
2327 E 3
2328 E 3
2329 D 4
2330 E 4
2331 C 2
2333 E 3
2334 E 3
2335 E 3
2336 E 3
2337 E 3
2338 E 3
2339 B 3
2340 C 3
2341 D 2
2342 C 2
2343 D 1
2344 D 3
2345 D 2
2346 C 4
2347 C 4
2348 C 4
2349 C 4
2350 D 4
2351 D 4
2352 E 2
2353 C 5
2354 D 5
2355 C 6
2356 D 6
2359 A 5
2360 B 5
2361 B 1
2362 B 1
2363 D 3
2364 D 3
2365 D 2
2366 C 5
3321 B 1
3322 B 1
3323 E 1
3324 E 2
3325 E 2
3326 E 3
3327 E 3
3328 E 3
3329 D 4
3330 E 3
3331 E 3
3332 E 3
3333 D 2
3334 D 2
3335 D 2
3336 C 2
3337 D 2
3338 C 2
3339 D 2
3340 C 2
3341 D 3
3342 C 3
3343 D 3
3344 C 3
3345 E 1
3346 E 1
3347 E 1
3348 E 1
3350 D 2
3351 D 2
3352 D 1
3353 D 1
3355 C 3
3356 C 3
3357 E 1
3358 E 2
3363 C 5
3364 D 5
3365 D 5
3366 D 5
3367 D 1
3368 C 1
3369 B 5
3370 E 5
3371 E 3
3372 E 3
3373 C 1
3376 C 1
3377 B 5
3378 B 5
3379 B 5
3380 B 5
3383 D 1
3384 D 1
3385 C 5
3386 D 5
3387 D 6
3388 D 6
5321 C 5
5322 E 5
5323 C 5
5324 E 5
6325 C 3
6326 C 4
6327 B 4
6328 C 3
6329 B 4
6330 C 3
6333 E 4
6334 E 4
6335 E 4
6336 E 4
6337 D 1
6339 D 1
6360 D 5
7323 C 1
7324 C 1
7325 E 1
7326 E 2
7327 D 1
7328 C 1
7329 D 4
7330 C 4
7350 D 2
8327 E 4
9321 B 1
9322 B 1
9323 B 3
9324 C 3
9325 D 3
9326 C 4
9327 D 3
9328 C 2
9329 C 3
9331 C 5
9332 B 5
9333 B 5
9335 E 4
9336 E 3
9337 E 3
9338 E 4
9340 C 3
9342 D 5
9343 B 1
9344 D 3
9345 C 4
9346 D 4
9347 C 2
9348 B 5
9349 B 2
9350 C 2
9351 D 5
9353 C 5
9354 C 2
9355 B 5
9356 D 5
9357 D 5
9358 E 4
9359 E 4
T321 A 1
----
8 D 9
9 B 13
10 B 10
11 D 8
14 D 9
1258 A 13
1261 C 6
1262 A 12
1263 A 7
1264 A 10
1265 C 9
1268 D 13
1280 C 7
1290 E 11
1291 C 9
2251 D 10
2252 E 10
2253 D 10
2254 D 9
2255 E 9
2256 D 9
2257 D 8
2258 C 8
2259 D 10
2260 D 11
2261 C 11
2262 C 11
2263 B 13
2264 D 13
2265 C 13
2266 C 13
2267 D 12
2268 C 12
2269 C 12
2270 B 9
2271 A 12
2279 D 12
2280 C 12
2281 C 12
2282 D 11
2283 A 11
2284 C 8
2285 B 9
2286 A 10
2287 B 9
2288 A 13
2289 A 13
2290 D 7
2295 C 12
2300 B 7
2301 B 8
2302 A 9
2303 A 7
3248 A 11
3249 A 11
3250 A 11
3251 D 13
3252 D 12
3253 A 13
3254 B 7
3255 E 13
3256 B 13
3257 E 12
3258 E 12
3259 A 12
3260 C 12
3261 C 11
3262 C 12
3263 B 12
3265 B 12
3266 A 8
3267 A 8
3268 A 10
3270 C 12
3271 D 7
3272 E 13
3273 B 8
3274 E 8
3275 D 8
3278 D 13
3279 E 12
3280 A 13
3281 C 12
3282 C 7
3283 D 11
3284 D 11
3285 B 9
3286 B 10
3287 B 11
3288 B 10
3289 B 10
3290 E 8
3295 D 7
3298 D 7
3299 D 7
3300 D 7
3301 B 7
3302 B 7
3303 E 13
3304 B 9
3305 C 9
3306 A 8
3308 A 10
3309 B 7
3310 A 9
3311 A 10
3312 B 9
3313 B 12
3315 A 8
3316 A 8
3317 A 13
3318 A 9
3319 A 7
3320 A 7
6251 E 10
6252 B 13
6255 E 9
6260 D 13
6261 D 13
6262 C 13
6263 C 13
6264 C 11
6265 A 13
6267 A 13
6269 B 11
6270 B 12
6271 C 12
6272 A 10
6281 E 12
6283 B 11
6284 B 10
6285 B 8
6286 B 8
6287 B 8
6288 B 8
6289 B 10
6290 B 10
6292 D 7
6293 B 12
6294 B 13
6295 A 10
6296 A 9
6297 A 9
6298 B 7
6299 B 7
6301 B 11
6302 B 7
7251 E 13
7252 C 12
7253 A 8
7254 D 12
7255 C 12
7260 A 8
7262 B 13
7263 A 13
7265 A 7
7266 B 7
7268 A 7
7280 A 12
7281 E 11
7282 B 10
7283 A 10
7284 A 11
7285 A 11
7286 B 9
7290 D 7
7292 E 12
8328 C 9
9251 E 9
9252 E 8
9253 E 12
9254 C 7
9255 B 7
9256 E 12
9258 A 7
9259 B 9
9260 A 10
9261 A 12
9262 A 8
9263 A 11
9264 A 11
9265 E 12
9266 E 12
9267 E 12
9268 E 13
9269 E 12
9270 A 10
9271 E 11
9272 A 11
9273 E 12
9274 A 13
9275 C 10
9276 D 9
9277 B 11
9278 E 9
9279 E 10
9280 D 10
9281 D 10
9284 C 12
9285 C 12
9286 C 9
9287 C 10
9288 D 10
9289 B 11
9290 C 10
9291 C 9
9292 C 11
9298 E 8
9299 B 12
9300 B 12
9302 A 11
9303 B 11
9304 B 12
9305 A 10
9306 B 12
9307 B 10
9308 C 9
9309 B 8
9312 A 9
9313 A 8
9314 A 9
9315 B 9
9316 D 13
T256 C 13
T257 C 12
T258 D 13
T265 B 10
T305 A 11
T312 A 7
T314 A 10
T315 B 9
T316 A 10
----
16 A 4
1327 A 4
2357 A 5
3381 A 4
9360 A 2
9361 A 2
9362 A 2
9363 A 2
9364 A 4
9365 A 3
9366 A 3
9367 A 3
9368 A 3
9369 A 3
9370 A 2



This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

POWER 5-VA SUPPLY PART 70/100W Version


PRIMARY TRAFO
Voltage Selector for /21 only
AMPLIFIER SUPPLY
DISPLAY-SUPPLY
+12V REGULATOR
AUX-SUPPLY
+5,6V-STABILIZER
POWER DOWN CIRCUIT
RELAY CONTROL CIRCUIT
ON/OFF CONTROL
ELECTRONIC VOLTAGE SELECTOR FOR STAND BY CIRCUIT
FOR /21 ONLY
MAINS VOLTAGE 230V 120V
NTC
REL
MFD
+V
GND
+VH
+VL
-VL
-VH
F2
F1
+12M
+12A
PD
3k3 for DPL
LC121503-PCT 5901
T6,3A UL T5A IEC
BDX53BFI
BD242BFI
7805CP
BC327-25
BC547B
GBU8D
1N5392
1N4003
1N4148

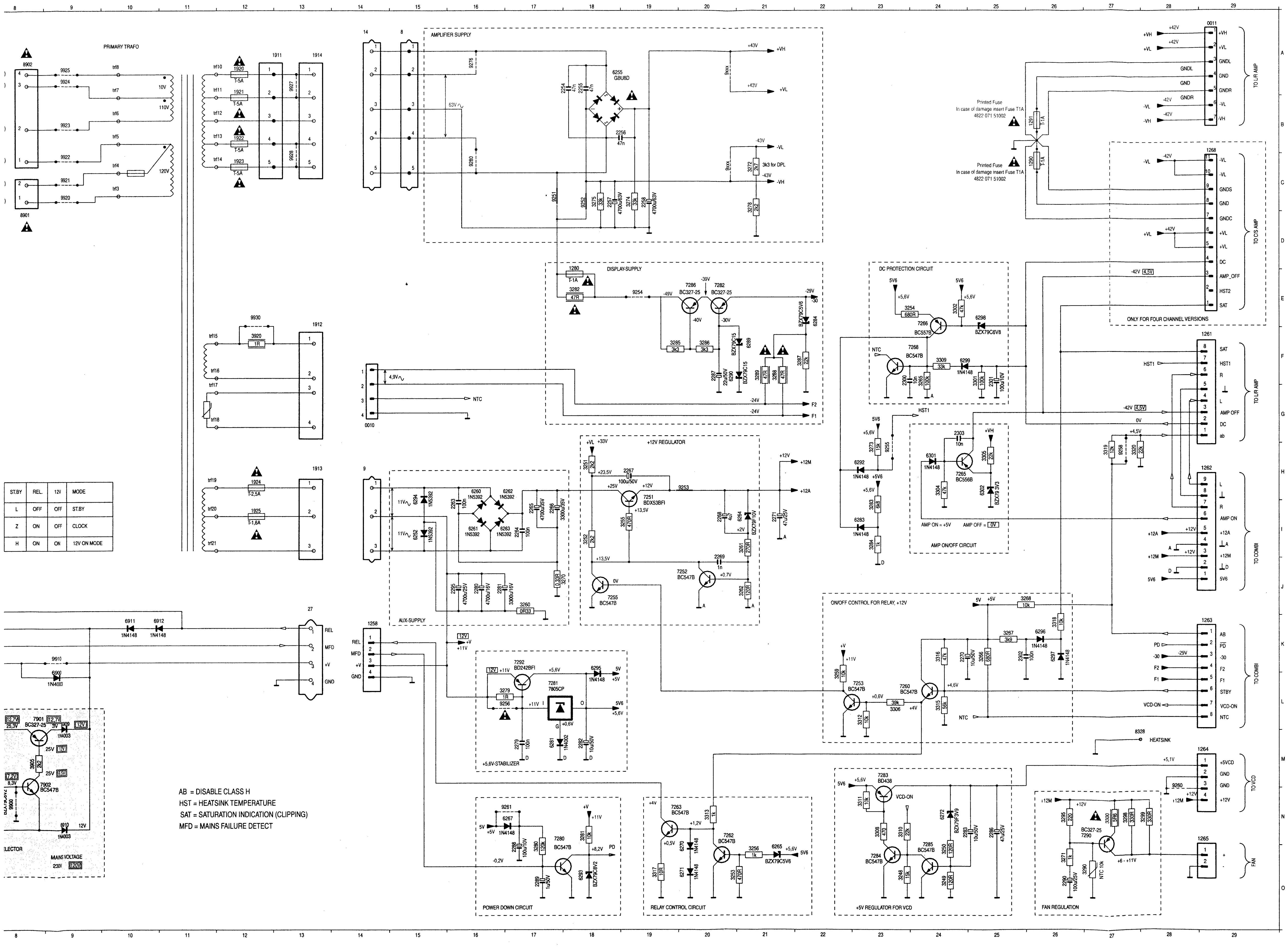
ST.BY	REL	12V	MODE
L	OFF	OFF	ST.BY
Z	ON	OFF	CLOCK
H	ON	ON	12V ON MODE

AB = DISABLE CLASS H
HST = HEATSINK TEMPERATURE
SAT = SATURATION INDICATION (CLIPPING)
MFD = MAINS FAILURE DETECT

EVM
.... Vdc measured during AMPLIFIER ON
V Vdc measured during AMPLIFIER OFF (mute)

Voltages measured at nominal mains voltage and low output signal

P5VA L/R Supply 70/100W 99 02 22


PRIMARY TRAFO
AMPLIFIER SUPPLY
DISPLAY-SUPPLY
DC PROTECTION CIRCUIT
AMP ON/OFF CIRCUIT
AMP ON = +5V AMP OFF = 0V
ONLY FOR FOUR CHANNEL VERSIONS
TO L/R AMP
TO C/S AMP
TO COMBI
TO VCD
FAN
AUX-SUPPLY
+12V REGULATOR
ON/OFF CONTROL FOR RELAY, +12V
+5,6V-STABILIZER
POWER DOWN CIRCUIT
RELAY CONTROL CIRCUIT
+5V REGULATOR FOR VCD
FAN REGULATION
HEATSINK
Printed Fuse
In case of damage insert Fuse T1A
4822 071 51002
MAINS VOLTAGE
230

ST.BY	REL.	12V	MODE
L	OFF	OFF	ST.BY
Z	ON	OFF	CLOCK
H	ON	ON	12V ON MODE

AB = DISABLE CLASS H
HST = HEATSINK TEMPERATURE
SAT = SATURATION INDICATION (CLIPPING)
MFD = MAINS FAILURE DETECT

0010	G14
0011	B29
1258	K14
1261	F29
1262	H29
1263	M29
1264	M29
1265	N29
1268	B29
1280	E18
1290	C26
1291	B26
14	A14
1901	A 1
1905	A 3
1906	C 6
1907	C 6
1909	A 7
1910	D 7
1911	A13
1912	E13
1913	H13
1914	A13
1920	A12
1921	A12
1922	B12
1923	C12
1924	H12
1925	I12
2251	A16
2252	A16
2253	B17
2254	A18
2255	A18
2256	B19
2257	C18
2258	C19
2260	C20
2262	C20
2263	I16
2264	I17
2265	I17
2266	I17
2267	H19
2268	I20
2269	J20
2270	K24
2271	I21
2279	M17
2280	J16
2281	J16
2282	M18
2283	N24
2286	N25
2287	F20
2288	O17
2289	O17
2290	O26
2295	J16
2300	F23
2301	F25
2302	K25
2303	G24
27	J13
2902	L 6
2903	M 7
2904	N 7
2905	N 6
2906	N 7
3248	O23
3249	O24
3250	O24
3251	H18
3252	I18
3253	O20
3254	E24
3255	I19
3256	O21
3259	L22
3260	J17
3261	I21
3262	J21
3265	F24
3266	K25
3267	K25
3268	J26
3270	J18
3271	O26
3272	C21
3273	H23
3274	C19
3275	C18
3278	C21
3279	L17
3280	O17
3281	N18
3282	E18
3283	I23
3284	I23
3285	F19
3286	F20
3287	F22
3288	F21
3289	F21
3290	O26
3295	N26
3298	N27
3299	N28
3300	N27
3301	F25
3302	E24
3304	H24
3305	H25
3306	L23
3308	N23
3309	F24
3310	N23
3311	N23
3312	L23
3313	N20
3315	L24
3316	K24
3317	O19
3318	K26
3319	H27
3320	H27
3901	N 3
3902	K 5
3903	K 6
3904	M 7
3905	M 8
3906	N 5
3907	B 1
3920	F12
5901	B 2
5902	A 2
5903	L 4
5905	A 4
6251	A17
6252	I15
6255	A18
6260	H16
6261	I16
6262	H17
6263	I17
6264	I20
6265	N21
6267	N17
6270	O19
6271	O19
6272	N24
6281	M17
6283	I23
6284	E22
6289	F21
6290	F20
6292	H23
6293	O18
6294	H15
6295	K18
6296	K26
6297	K26
6298	E25
6299	F24
6301	H24
6302	H25
6900	K 9
6901	L 6
6902	M 6
6903	L 7
6904	M 6
6905	L 5
6906	L 5
6908	N 8
6909	L 9
6910	N 9
6911	K10
6912	K11
7251	H19
7252	J20
7253	L23
7255	J18
7260	L24
7262	N20
7263	N20
7265	H24
7266	E24
7268	F24
7280	N17
7281	L17
7282	E20
7283	M23
7284	O23
7285	O24
7286	E20
7290	N26
7292	K17
7901	L 8
7902	M 8
8	A15
8901	D 8
8902	A 8
9	H14
9251	C17
9252	C18
9253	H20
9254	E19
9255	H23
9256	L17
9258	H27
9260	N28
9261	N17
9276	A16
9280	C16
9900	N 8
9901	A 2
9902	B 2
9903	A 3
9904	B 4
9905	C 6
9906	B 6
9910	K 9
9911	F 1
9912	G 1
9913	G 1
9914	G 1
9915	B 6
9916	C 4
9917	C 5
9918	C 3
9920	C 9
9921	C 9
9922	C 9
9923	B 9
9924	A 9
9925	A 9
9927	A13
9928	C13
9930	E12
trf10	A11
trf11	A11
trf12	B11
trf13	B11
trf14	C11
trf15	F12
trf16	F11
trf17	G12
trf18	G11
trf19	H11
trf20	I11
trf21	I11
trf3	C10
trf4	C10
trf5	B10
trf6	B10
trf7	A10
trf8	A10

CS 53 244

COMPONENT LAYOUT MAINS BOARD

Interconnection Board

primary side

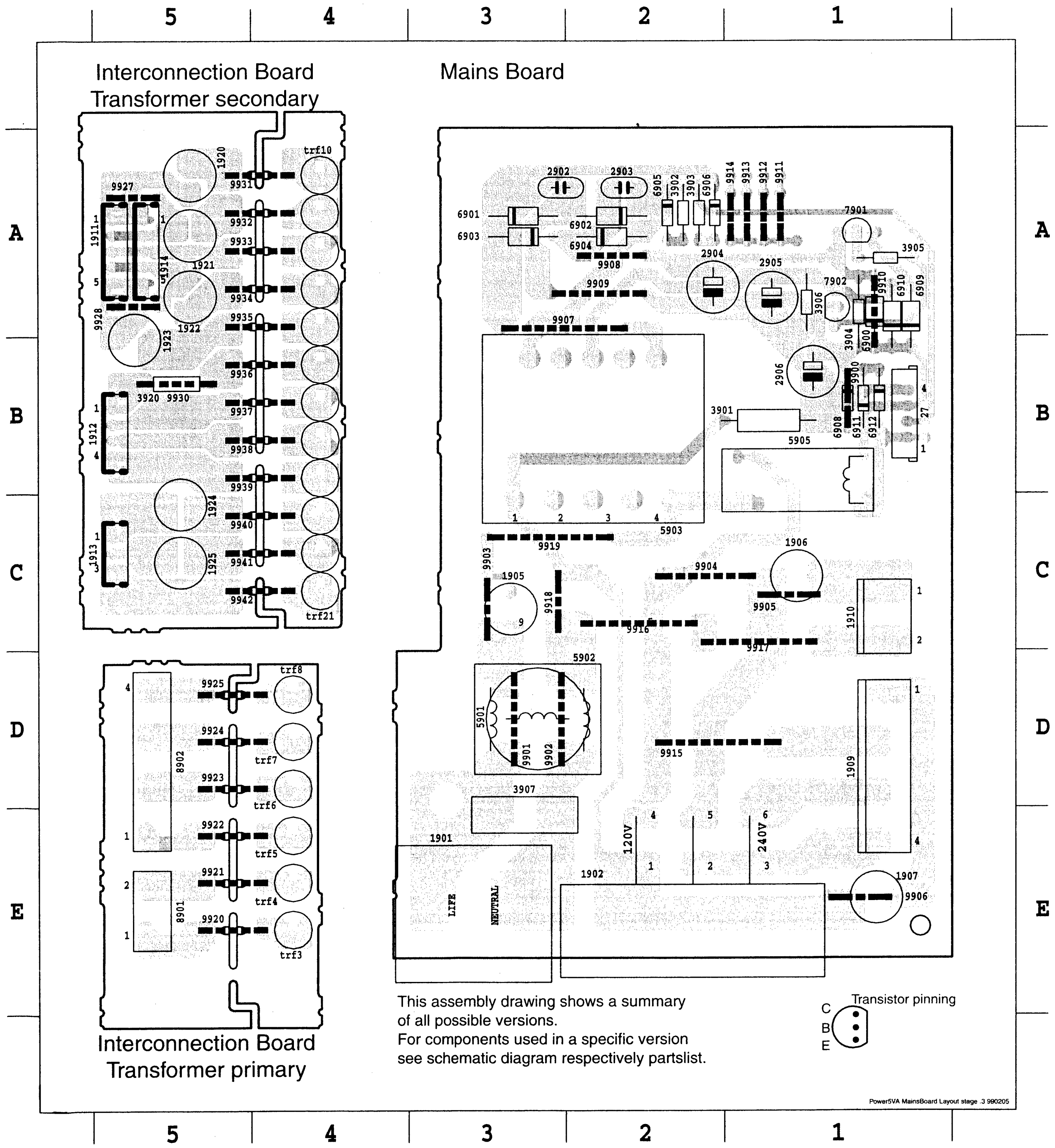
8901 E 5
8902 D 5
9920 E 4
9921 E 4
9922 E 4
9923 D 4
9924 D 4
9925 D 4
trf3 E 4
trf4 E 4
trf5 E 4
trf6 D 4
trf7 D 4
trf8 D 4

secondary side

1911 A 5
1912 B 5
1913 C 5
1914 A 5
1920 A 4
1921 A 4
1922 A 4
1923 B 5
1924 C 4
1925 C 4
3920 B 4
9927 A 5
9928 A 5
9930 B 4
9931 A 4
9932 A 4
9933 A 4
9934 A 4
9935 B 4
9936 B 4
9937 B 4
9938 B 4
9939 C 4
9940 C 4
9941 C 4
9942 C 4
trf10 A 3
trf11 A 3
trf12 A 3
trf13 A 3
trf14 B 3
trf15 B 3
trf16 B 3
trf17 B 3
trf18 C 3
trf19 C 3
trf20 C 3
trf21 C 3

Mains Board

27 B 1
1901 E 3
1902 E 2
1905 C 3
1906 C 1
1907 E 1
1909 D 1
1910 C 1
2902 A 3
2903 A 2
2904 A 2
2905 A 1
2906 B 1
3901 B 1
3902 A 2
3903 A 2
3904 A 1
3905 A 1
3906 A 1
3907 E 3
5901 D 3
5902 D 3
5903 B 2
5905 B 1
6900 A 1
6901 A 3
6902 A 2
6903 A 3
6904 A 2
6905 A 2
6906 A 2
6908 B 1
6909 A 1
6910 A 1
6911 B 1
6912 B 1
7901 A 1
7902 A 1
9900 B 1
9901 D 3
9902 D 3
9903 C 3
9904 C 2
9905 C 1
9906 E 1
9907 A 3
9908 A 2
9909 A 2
9910 A 1
9911 A 1
9912 A 1
9913 A 1
9914 A 1
9915 D 2
9916 C 2
9917 C 1
9918 C 3
9919 C 3


5
4
3
2
1
A
B
C
D
E
Interconnection Board
Transformer secondary
Mains Board
9927
1911
1914
1921
1920
1922
1923
9928
3920
9930
1912
1924
1913
1925
9931
9932
9933
9934
9935
9936
9937
9938
9939
9940
9941
9942
trf10
trf21
2902
2903
6901
6903
6902
6904
6905
3902
3903
6906
9914
9913
9912
9911
7901
3905
9908
9909
2904
2905
7902
3906
9910
6910
6909
9907
2906
3904
6900
9900
3901
5905
6908
6911
6912
27
9903
9919
5903
9904
1906
1905
9918
9905
9916
9917
1910
5902
5901
9901
9902
9915
1909
3907
1901
LIFE
NEUTRAL
120V
240V
1902
1907
9906
trf8
9925
9924
trf7
9923
trf6
9922
trf5
9921
trf4
9920
trf3
8902
8901
Interconnection Board
Transformer primary
Transistor pinning
C
B
E
PowerSVA MainsBoard Layout stage .3 990205

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

9367 A 3
9368 A 3
9369 A 3
9370 A 2

T312 A 7
T314 A 10
T315 B 9
T316 A 10
----
16 A 4
1327 A 4
2357 A 5
3381 A 4
9360 A 2
9361 A 2
9362 A 2
9363 A 2
9364 A 4
9365 A 3
9366 A 3

9304 B 12
9305 A 10
9306 B 12
9307 B 10
9308 C 9
9309 B 8
9312 A 9
9313 A 8
9314 A 9
9315 B 9
9316 D 13
T256 C 13
T257 C 12
T258 D 13
T265 B 10
T305 A 11

9280 D 10
9281 D 10
9284 C 12
9285 C 12
9286 C 9
9287 C 10
9288 D 10
9289 B 11
9290 C 10
9291 C 9
9292 C 11
9298 E 8
9299 B 12
9300 B 12
9302 A 11
9303 B 11

9264 A 11
9265 E 12
9266 E 12
9267 E 12
9268 E 13
9269 E 12
9270 A 10
9271 E 11
9272 A 11
9273 E 12
9274 A 13
9275 C 10
9276 D 9
9277 B 11
9278 E 9
9279 E 10

7286 B 9
7290 D 7
7292 E 12
8328 C 9
9251 E 9
9252 E 8
9253 E 12
9254 C 7
9255 B 7
9256 E 12
9258 A 7
9259 B 9
9260 A 10
9261 A 12
9262 A 8
9263 A 11

7252 C 12
7253 A 8
7254 D 12
7255 C 12
7260 A 8
7262 B 13
7263 A 13
7265 A 7
7266 B 7
7268 A 7
7280 A 12
7281 E 11
7282 B 10
7283 A 10
7284 A 11
7285 A 11

6286 B 8
6287 B 8
6288 B 8
6289 B 10
6290 B 10
6292 D 7
6293 B 12
6294 B 13
6295 A 10
6296 A 9
6297 A 9
6298 B 7
6299 B 7
6301 B 11
6302 B 7
7251 E 13

6255 E 9
6260 D 13
6261 D 13
6262 C 13
6263 C 13
6264 C 11
6265 A 13
6267 A 13
6269 B 11
6270 B 12
6271 C 12
6272 A 10
6281 E 12
6283 B 11
6284 B 10
6285 B 8

3305 C 9
3306 A 8
3308 A 10
3309 B 7
3310 A 9
3311 A 10
3312 B 9
3313 B 12
3315 A 8
3316 A 8
3317 A 13
3318 A 9
3319 A 7
3320 A 7
6251 E 10
6252 B 13

3283 D 11
3284 D 11
3285 B 9
3286 B 10
3287 B 11
3288 B 10
3289 B 10
3290 E 8
3295 D 7
3298 D 7
3299 D 7
3300 D 7
3301 B 7
3302 B 7
3303 E 13
3304 B 9

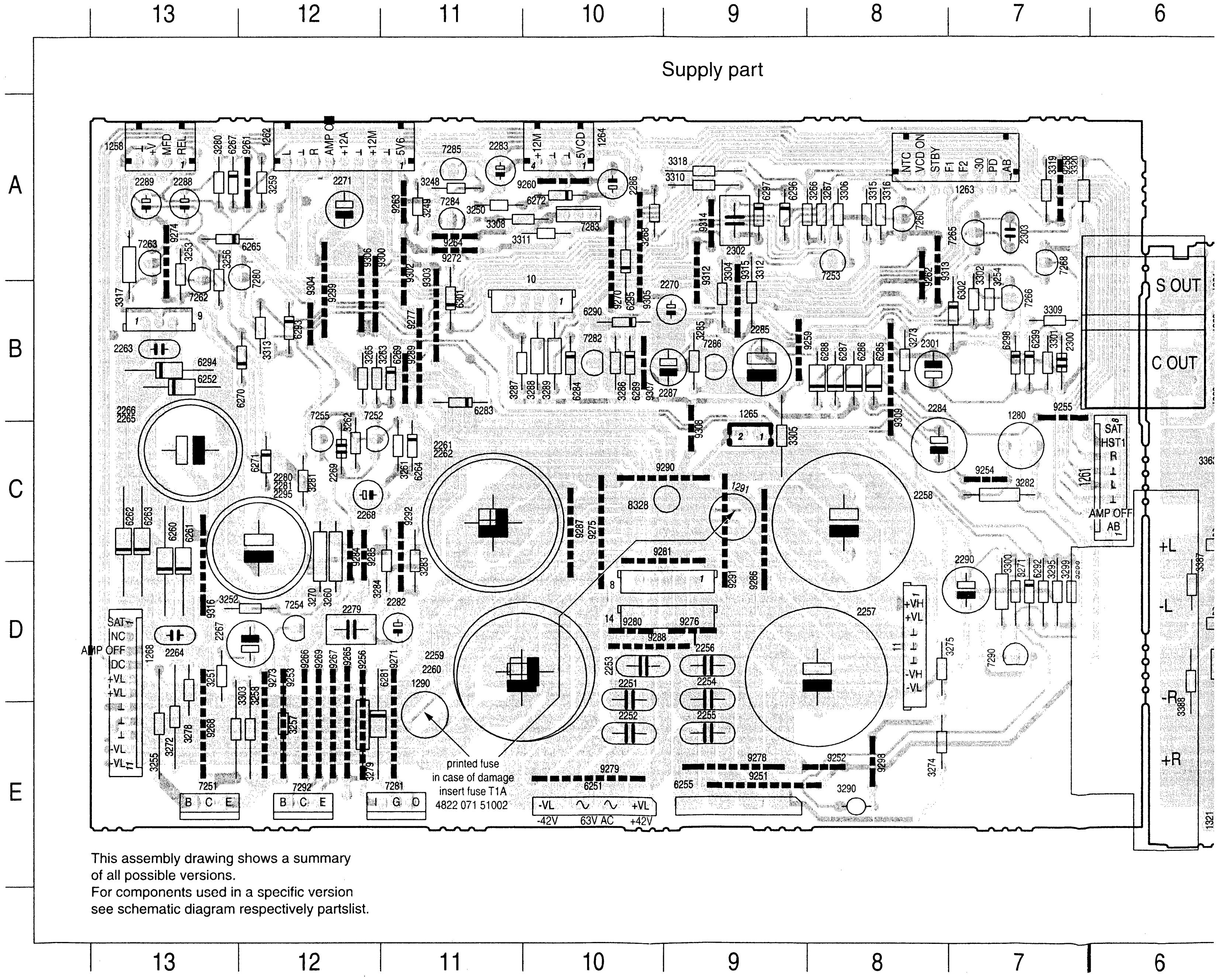
3263 B 12
3265 B 12
3266 A 8
3267 A 8
3268 A 10
3270 C 12
3271 D 7
3272 E 13
3273 B 8
3274 E 8
3275 D 8
3278 D 13
3279 E 12
3280 A 13
3281 C 12
3282 C 7

2303 A 7
3248 A 11
3249 A 11
3250 A 11
3251 D 13
3252 D 12
3253 A 13
3254 B 7
3255 E 13
3256 B 13
3257 E 12
3258 E 12
3259 A 12
3260 C 12
3261 C 11
3262 C 12

2279 D 12
2280 C 12
2281 C 12
2282 D 11
2283 A 11
2284 C 8
2285 B 9
2286 A 10
2287 B 9
2288 A 13
2289 A 13
2290 D 7
2295 C 12
2300 B 7
2301 B 8
2302 A 9

2256 D 9
2257 D 8
2258 C 8
2259 D 10
2260 D 11
2261 C 11
2262 C 11
2263 B 13
2264 D 13
2265 C 13
2266 C 13
2267 D 12
2268 C 12
2269 C 12
2270 B 9
2271 A 12

14 D 9
1258 A 13
1261 C 6
1262 A 12
1263 A 7
1264 A 10
1265 C 9
1268 D 13
1280 C 7
1290 E 11
1291 C 9
2251 D 10
2252 E 10
2253 D 10
2254 D 9
2255 E 9


13
12
11
10
9
8
7
6
A
B
C
D
E
Supply part
MFD
REL
AMP
+12A
+12M
5V6
+12M
5VCD
NTC
VCD ON
STBY
F1
F2
PD
AB
S OUT
C OUT
SAT
HST1
R
AMP OFF
AB
+L
-L
-R
+R
SAT
NC
AMP OFF
DC
+VL
+VH
+VL
-VH
-VL
1258
2289
2288
7263
3317
7262
6265
6294
6252
2263
2266
2262
2283
1263
1264
3318
3310
7285
7284
3308
3311
7283
9260
9264
9272
6290
10
7282
2270
7286
2285
2302
7253
1265
9290
8328
1291
9281
2258
2257
9280
9276
9288
2256
2254
2255
2251
2252
2253
9278
9279
9251
9252
6251
6255
1290
2259
2260
2279
7254
7255
7252
2261
2262
2268
2290
9254
3282
1280
9255
2284
2301
3309
7268
3274
3275
7290
3290
7251
7292
7281
B C E
B C E
I G O
printed fuse
in case of damage
insert fuse T1A
4822 071 51002
-VL ~ ~ +VL
-42V 63V AC +42V

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

COMPONENT LAYOUT SUPPLY PART & L/R AMPLIFIER PART

3 C 2
1321 D 6
1322 B 6
1323 B 6
1324 B 6
1325 B 2
1326 B 1
1328 E 4
2321 E 3
2322 E 3
2323 E 2
2324 E 2
2325 D 4
2326 E 4
2327 E 3
2328 E 3

2329 D 4
2330 E 4
2331 C 2
2333 E 3
2334 E 3
2335 E 3
2336 E 3
2337 E 3
2338 E 3
2339 B 3
2340 C 3
2341 D 2
2342 C 2
2343 D 1
2344 D 3
2345 D 2

2346 C 4
2347 C 4
2348 C 4
2349 C 4
2350 D 4
2351 D 4
2352 E 2
2353 C 5
2354 D 5
2355 C 6
2356 D 6
2359 A 5
2360 B 5
2361 B 1
2362 B 1
2363 D 3

2364 D 3
2365 D 2
2366 C 5
3321 B 1
3322 B 1
3323 E 1
3324 E 2
3325 E 2
3326 E 3
3327 E 3
3328 E 3
3329 D 4
3330 E 3
3331 E 3
3332 E 3
3333 D 2

3334 D 2
3335 D 2
3336 C 2
3337 D 2
3338 C 2
3339 D 2
3340 C 2
3341 D 3
3342 C 3
3343 D 3
3344 C 3
3345 E 1
3346 E 1
3347 E 1
3348 E 1
3350 D 2

3351 D 2
3352 D 1
3353 D 1
3355 C 3
3356 C 3
3357 E 1
3358 E 2
3363 C 5
3364 D 5
3365 D 5
3366 D 5
3367 D 1
3368 C 1
3369 B 5
3370 E 5
3371 E 3

3372 E 3
3373 C 1
3376 C 1
3377 B 5
3378 B 5
3379 B 5
3380 B 5
3383 D 1
3384 D 1
3385 C 5
3386 D 5
3387 D 6
3388 D 6
5321 C 5
5322 E 5
5323 C 5

5324 E 5
6325 C 3
6326 C 4
6327 B 4
6328 C 3
6329 B 4
6330 C 3
6333 E 4
6334 E 4
6335 E 4
6336 E 4
6337 D 1
6339 D 1
6360 D 5
7323 C 1
7324 C 1

7325 E 1
7326 E 2
7327 D 1
7328 C 1
7329 D 4
7330 C 4
7350 D 2
8327 E 4
9321 B 1
9322 B 1
9323 B 3
9324 C 3
9325 D 3
9326 C 4
9327 D 3
9328 C 2

9329 C 3
9331 C 5
9332 B 5
9333 B 5
9335 E 4
9336 E 3
9337 E 3
9338 E 4
9340 C 3
9342 D 5
9343 B 1
9344 D 3
9345 C 4
9346 D 4
9347 C 2
9348 B 5

9349 B 2
9350 C 2
9351 D 5
9353 C 5
9354 C 2
9355 B 5
9356 D 5
9357 D 5
9358 E 4
9359 E 4
T321 A 1
----
8 D 9
9 B 13
10 B 10
11 D 8

14 D 9
1258 A 13
1261 C 6
1262 A 12
1263 A 7
1264 A 10
1265 C 9
1268 D 13
1280 C 7
1290 E 11
1291 C 9
2251 D 10
2252 E 10
2253 D 10
2254 D 9
2255 E 9

2256 D 9
2257 D 8
2258 C 8
2259 D 10
2260 D 11
2261 C 11
2262 C 11
2263 B 13
2264 D 13
2265 C 13
2266 C 13
2267 D 12
2268 C 12
2269 C 12
2270 B 9
2271 A 12

2279 D 12
2280 C 12
2281 C 12
2282 D 11
2283 A 11
2284 C 8
2285 B 9
2286 A 10
2287 B 9
2288 A 13
2289 A 13
2290 D 7
2295 C 12
2300 B 7
2301 B 8
2302 A 9

2303 A 7
3248 A 11
3249 A 11
3250 A 11
3251 D 13
3252 D 12
3253 A 13
3254 B 7
3255 E 13
3256 B 13
3257 E 12
3258 E 12
3259 A 12
3260 C 12
3261 C 11
3262 C 12

3263 B 12
3265 B 12
3266 A 8
3267 A 8
3268 A 10
3270 C 12
3271 D 7
3272 E 13
3273 B 8
3274 E 8
3275 D 8
3278 D 13
3279 E 12
3280 A 13
3281 C 12
3282 C 7

3283 D 11
3284 D 11
3285 B 9
3286 B 10
3287 B 11
3288 B 10
3289 B 10
3290 E 8
3295 D 7
3298 D 7
3299 D 7
3300 D 7
3301 B 7
3302 B 7
3303 E 13
3304 B 9

3305 C 9
3306 A 8
3308 A 10
3309 B 7
3310 A 9
3311 A 10
3312 B 9
3313 B 12
3315 A 8
3316 A 8
3317 A 13
3318 A 9
3319 A 7
3320 A 7
6251 E 10
6252 B 13

6255 E 9
6260 D 13
6261 D 13
6262 C 13
6263 C 13
6264 C 11
6265 A 13
6267 A 13
6269 B 11
6270 B 12
6271 C 12
6272 A 10
6281 E 12
6283 B 11
6284 B 10
6285 B 8

6286 B 8
6287 B 8
6288 B 8
6289 B 10
6290 B 10
6292 D 7
6293 B 12
6294 B 13
6295 A 10
6296 A 9
6297 A 9
6298 B 7
6299 B 7
6301 B 11
6302 B 7
7251 E 13

7252 C 12
7253 A 8
7254 D 12
7255 C 12
7260 A 8
7262 B 13
7263 A 13
7265 A 7
7266 B 7
7268 A 7
7280 A 12
7281 E 11
7282 B 10
7283 A 10
7284 A 11
7285 A 11

7286 B 9
7290 D 7
7292 E 12
8328 C 9
9251 E 9
9252 E 8
9253 E 12
9254 C 7
9255 B 7
9256 E 12
9258 A 7
9259 B 9
9260 A 10
9261 A 12
9262 A 8
9263 A 11

9264 A 11
9265 E 12
9266 E 12
9267 E 12
9268 E 13
9269 E 12
9270 A 10
9271 E 11
9272 A 11
9273 E 12
9274 A 13
9275 C 10
9276 D 9
9277 B 11
9278 E 9
9279 E 10

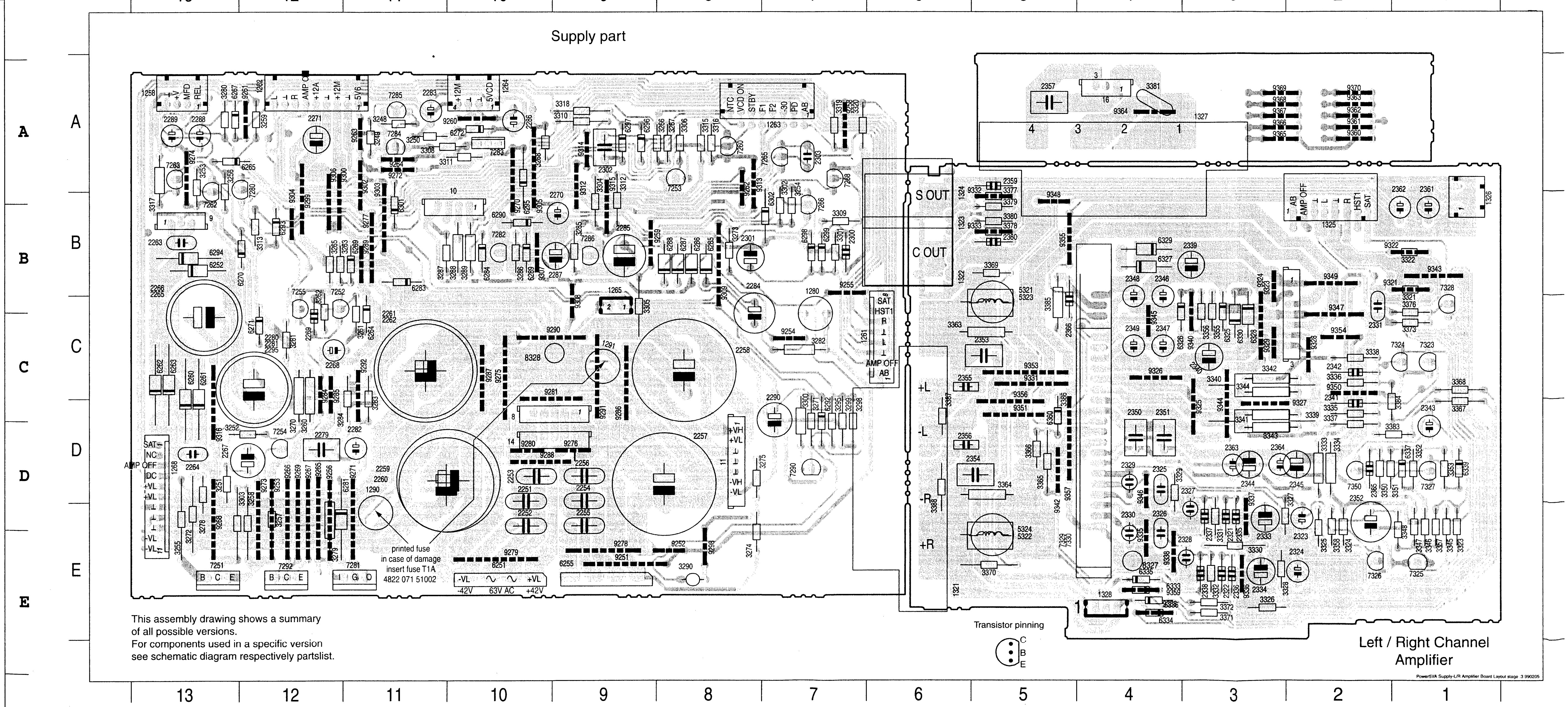
9280 D 10
9281 D 10
9284 C 12
9285 C 12
9286 C 9
9287 C 10
9288 D 10
9289 B 11
9290 C 10
9291 C 9
9292 C 11
9298 E 8
9299 B 12
9300 B 12
9302 A 11
9303 B 11

9304 B 12
9305 A 10
9306 B 12
9307 B 10
9308 C 9
9309 B 8
9312 A 9
9313 A 8
9314 A 9
9315 B 9
9316 D 13
T256 C 13
T257 C 12
T258 D 13
T265 B 10
T305 A 11

T312 A 7
T314 A 10
T315 B 9
T316 A 10
----
16 A 4
1327 A 4
2357 A 5
3381 A 4
9360 A 2
9361 A 2
9362 A 2
9363 A 2
9364 A 4
9365 A 3
9366 A 3

9367 A 3
9368 A 3
9369 A 3
9370 A 2

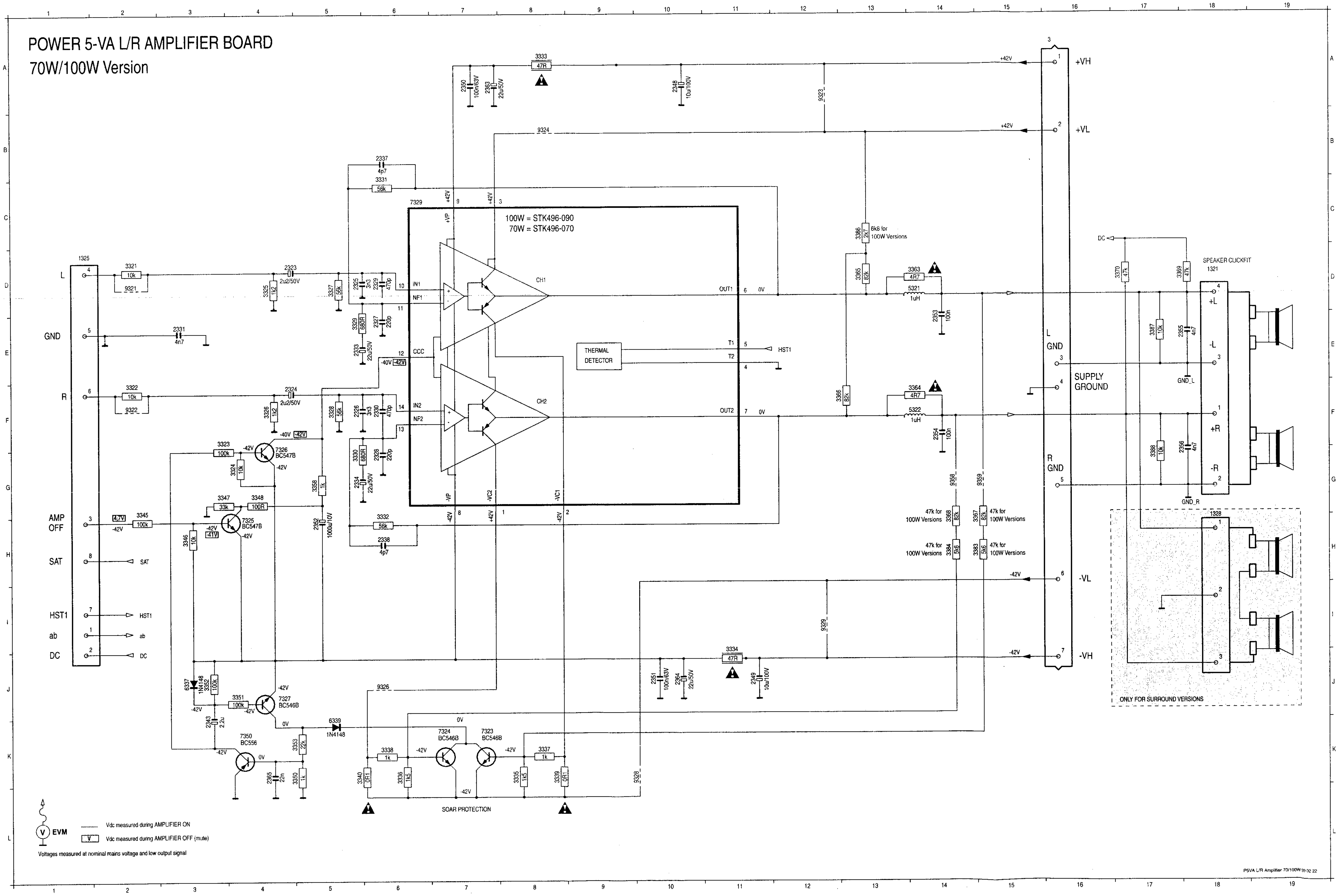
14 A 1
15 D 2
16 C 2
17 C 1
18 C 3
19 C 3


13
12
11
10
9
8
7
6
5
4
3
2
1
A
B
C
D
E
Supply part
S OUT
C OUT
Transistor pinning
C
B
E
Left / Right Channel Amplifier
PowerSVA Supply-L/R Amplifier Board Layout stage .3 990205

printed fuse
in case of damage
insert fuse T1A
4822 071 51002

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

POWER 5-VA L/R AMPLIFIER BOARD
70W/100W Version


1325
L
GND
R
AMP OFF
SAT
HST1
ab
DC
3321 10k
9321
3322 10k
9322
2331 4n7
2323 2u2/50V
2324 2u2/50V
3325 1k2
3326 1k2
3327 56k
3328 56k
2325 3n3
2326 3n3
2329 470p
2330 470p
2327 220p
2328 220p
3329 680R
3330 680R
2333 22u/50V
2334 22u/50V
2337 4p7
3331 56k
3332 56k
2338 4p7
7329
100W = STK496-090
70W = STK496-070
+VP
-VP
-VC2
-VC1
IN1
NF1
IN2
NF2
CCC
CH1
CH2
OUT1
OUT2
THERMAL DETECTOR
T1
T2
2350 100n/63V
2363 22u/50V
3333 47R
2348 10u/100V
9323
9324
+42V
-42V
-40V
-41V
4,7V
3323 100k
3324 10k
7326 BC547B
3347 33k
3348 100R
7325 BC547B
3345 100k
3346 10k
3358 1k
2352 1000u/10V
6337 1N4148
3352 100k
3351 100k
7327 BC546B
2343 2.2u
7350 BC556
3353 22k
2365 22n
3350 1k
6339 1N4148
9326
3338 1k
3336 1k5
3340 0R1
7324 BC546B
7323 BC546B
3337 1k
3335 1k5
3339 0R1
SOAR PROTECTION
0V
2351 100n/63V
2364 22u/50V
3334 47R
2349 10u/100V
9329
9328
3386 2k7
6k8 for 100W Versions
3365 82k
3366 82k
3363 4R7
3364 4R7
5321 1uH
5322 1uH
2353 100n
2354 100n
9358
9359
3368 82k
3367 82k
47k for 100W Versions
3384 56k
3383 56k
+VH
+VL
-VL
-VH
L GND
SUPPLY GROUND
R GND
DC
3370 47k
3369 47k
3387 10k
3388 10k
2355 4n7
2356 4n7
SPEAKER CLICKFIT
1321
+L
-L
+R
-R
GND_L
GND_R
1328
ONLY FOR SURROUND VERSIONS
V EVM

Vdc measured during AMPLIFIER ON

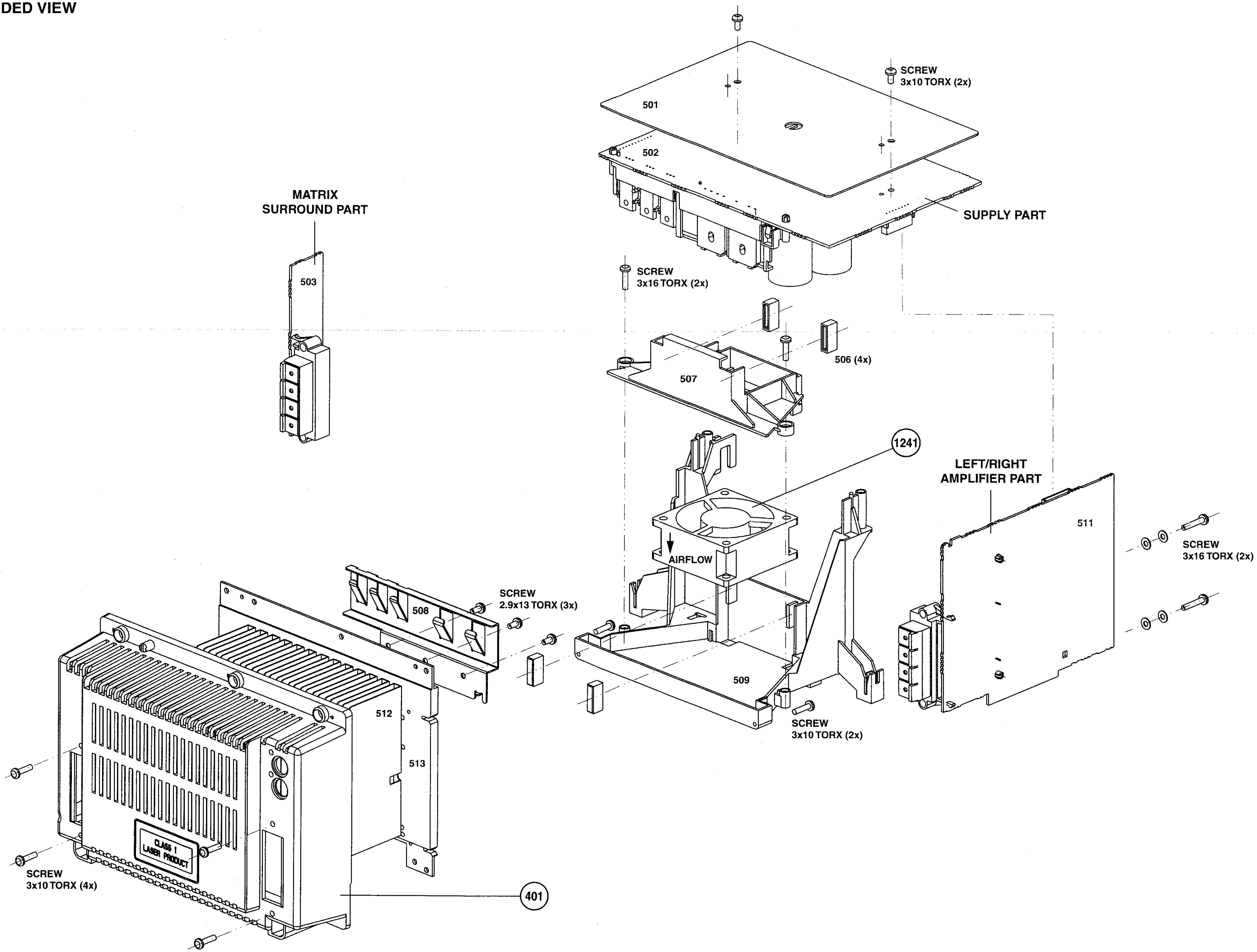
V Vdc measured during AMPLIFIER OFF (mute)

Voltages measured at nominal mains voltage and low output signal

P5VA L/R Amplifier 70/100W 99 02 22

1321	D18
1325	D 1
1328	G18
2321	B 6
2322	H 6
2323	D 4
2324	F 4
2325	D 5
2326	F 5
2327	E 6
2328	G 6
2329	D 6
2330	F 6
2331	E 3
2333	E 5
2334	G 5
2335	B 6
2336	H 6
2337	B 6
2338	H 6
2341	K 7
2342	K 6
2343	K 3
2344	A 8
2345	J10
2346	B10
2347	I11
2348	A10
2349	J11
2350	A 7
2351	J10
2352	H 5
2353	E14
2354	F14
2355	E18
2356	G18
2363	A 7
2364	J10
2365	K 4
2366	C12
3	A16
3321	D 2
3322	F 2
3323	F 3
3324	G 4
3325	D 4
3326	F 4
3327	D 5
3328	F 5
3329	E 5
3330	G 5
3331	C 6
3332	H 6
3333	A 8
3334	J11
3335	K 8
3336	K 6
3337	K 8
3338	K 6
3339	K 8
3340	K 5
3345	G 2
3346	H 3
3347	G 3
3348	G 4
3350	K 5
3351	J 4
3352	J 3
3353	K 5
3355	C12
3356	I12
3358	G 5
3363	D14
3364	E14
3365	D13
3366	F13
3367	H15
3368	H14
3369	D18
3370	D17
3383	H15
3384	H14
3385	D12
3386	C13
3387	E17
3388	G17
5321	D14
5322	F14
5323	D14
5324	F14
6325	B12
6326	I12
6327	A13
6328	I13
6329	A13
6330	I13
6333	G14
6334	G14
6337	J 3
6339	K 5
6360	C12
7323	K 7
7324	K 7
7325	H 4
7326	G 4
7327	J 4
7329	C 6
7350	K 4
9321	D 2
9322	F 2
9323	A12
9324	J 6
9325	J 6
9326	J 6
9327	K 9
9328	K10
9329	I12
9331	D12
9358	G14
9359	G15

EXPLODED VIEW


SCREW
3x10 TORX (2x)
501
502
SUPPLY PART
MATRIX
SURROUND PART
503
SCREW
3x16 TORX (2x)
506 (4x)
507
1241
LEFT/RIGHT
AMPLIFIER PART
511
AIRFLOW
SCREW
3x16 TORX (2x)
SCREW
2.9x13 TORX (3x)
508
509
SCREW
3x10 TORX (2x)
512
513
CLASS 1
LASER PRODUCT
SCREW
3x10 TORX (4x)
401

MECHANICAL PARTS LIST

401	4822 256 10558	Rucksack - L/R
401	4822 256 10555	Rucksack - L/R and Matrix
1241	4822 361 11161	DC Bruchless Fan
	4822 256 10556	Holder STk47/P5-VA
	4822 466 93148	Spacer 5mm

ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

1901	4822 265 31015	⚠	Mains Socket
1901#	4822 265 31016	⚠	Mains Socket
1902*	4822 272 10269	⚠	Voltage Selector
1905^	4822 071 55002	⚠	Fuse T5A 250V
1905#	4822 252 51123	⚠	Fuse T6,3A 250V
1906*	4822 071 55002	⚠	Fuse T5A 250V
1907*	4822 071 55002	⚠	Fuse T5A 250V
1909*	4822 267 10728	⚠	Primary Connector
1910	4822 265 20723	⚠	Primary Connector
1920	4822 071 55002	⚠	Fuse T5A 250V
1923	4822 071 55002	⚠	Fuse T5A 250V
1924	4822 071 52502	⚠	Fuse T2,5A 250V
1925	4822 071 51602	⚠	Fuse 1,6A 250V

CAPACITORS

2902	4822 121 43526	47nF 5% 250V
2903	4822 121 43526	47nF 5% 250V
2904*	4822 124 40255	100µF 20% 63V
2905*	4822 124 81029	100µF 20% 25V

RESISTORS

3901#	4822 053 21106	⚠	10M 5% 0,5W
3902	4822 050 11002		1k 1% 0,4W
3903	4822 050 11002		1k 1% 0,4W
3904*	4822 116 52283		4k7 5% 0,5W
3904^	4822 116 52244		15k 5% 0,5W
3905*	4822 116 52256		2k2 5% 0,5W
3906*	4822 116 83864		10k 5% 0,5W
3920*	4822 052 10108	⚠	1R 5% 0,33W

COILS & FILTERS

5901^	4822 157 11832	⚠	400µH 3A
5902*	4822 157 11628	⚠	Mains Choke
5903^	4822 146 11143	⚠	Standby Transformer
5903*	4822 146 11144	⚠	Standby Transformer
5903#	4822 146 11142	⚠	Standby Transformer
5905	4822 280 10382	⚠	Relay 1P 9V

DIODES

6900^	4822 130 31878	1N4003G
6901	4822 130 31878	1N4003G
6902	4822 130 31878	1N4003G
6903	4822 130 31878	1N4003G
6904	4822 130 31878	1N4003G
6905	4822 130 30621	1N4148
6906	4822 130 30621	1N4148
6908*	4822 130 34382	BZX79-B8V2
6909*	4822 130 32245	BYV10-40
6910*	4822 130 31878	1N4003G
6911	4822 130 30621	1N4148
6912	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7901*	4822 130 41246	BC327-25
7902*	4822 130 40959	BC547B

* For /21/21M only
^ Except for /21/21M
# For /37 only

Note : Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - SUPPLY & LEFT/RIGHT AMPLIFIER BOARD

MISCELLANEOUS

1321	4822 267 31176	L/R Loudspeaker Socket
1327	4822 265 10912	Matrix Surround Socket

CAPACITORS

2254	4822 121 43526	47nF 5% 250V
2255	4822 121 43526	47nF 5% 250V
2256	4822 121 43526	47nF 5% 250V
2257	4822 124 80415	4700µF 20% 50V
2258	4822 124 80415	4700µF 20% 50V
2263	5322 121 42386	100nF 5% 63V
2264	5322 121 42386	100nF 5% 63V
2265	4822 124 80563	4700µF 20% 35V
2267	4822 124 40255	100µF 20% 63V
2268	4822 124 40769	4,7µF 20% 100V
2269	4822 122 33197	1nF 10% 50V
2270	4822 124 41579	10µF 20% 50V
2271	4822 124 40433	47µF 20% 25V
2279	5322 121 42386	100nF 5% 63V
2280	4822 124 12328	6800µF 16V
2282	4822 124 41579	10µF 20% 50V
2289	4822 124 40242	1µF 20% 63V
2290	4822 124 81029	100µF 20% 25V
2300	4822 121 51387	10nF 20% 16V
2301	4822 124 41584	100µF 20% 10V
2303	4822 121 41857	10nF 5% 250V
2323	4822 124 41576	2,2µF 20% 50V
2324	4822 124 41576	2,2µF 20% 50V
2325	4822 122 33532	3,3nF 5% 50V
2326	4822 122 33532	3,3nF 5% 50V
2327	5322 122 32334	220pF 10% 100V
2328	5322 122 32334	220pF 10% 100V
2329	5322 122 32311	470pF 10% 100V
2330	5322 122 32311	470pF 10% 100V
2331	5322 122 32261	4,7nF 10% 100V
2333	4822 124 81151	22µF 50V
2334	4822 124 81151	22µF 50V
2337	4822 122 10465	4,7pF 10% 50V
2338	4822 122 10465	4,7pF 10% 50V
2343	4822 124 41576	2,2µF 20% 50V
2344	4822 124 40764	22µF 100 V
2345	4822 124 40764	22µF 100 V
2348	4822 124 81043	10µF 20% 100V
2349	4822 124 81043	10µF 20% 100V
2350	5322 121 42386	100nF 5% 63V
2351	5322 121 42386	100nF 5% 63V
2352	4822 124 40181	220µF 20% 10V
2353	5322 121 42386	100nF 5% 63V
2354	5322 121 42386	100nF 5% 63V
2355	5322 122 32261	4,7nF 10% 100V
2356	5322 122 32261	4,7nF 10% 100V
2365	4822 126 12785	47nF 50V

RESISTORS

3251	4822 116 52256		2k2 5% 0,5W
3252	4822 116 52256		2k2 5% 0,5W
3254	4822 116 52228		680R 5% 0,5W
3255	4822 116 83883		470R 5% 0,5W
3259	4822 116 83864		10k 5% 0,5W
3260	4822 117 11342		0R33 5% 2W
3261	4822 116 83876		270R 5% 0,5W
3262	4822 116 52206		120R 5% 0,5W
3265	4822 116 52234		100k 5% 0,5W
3266	4822 116 52228		680R 5% 0,5W
3267	4822 116 52276		3k9 5% 0,5W
3268	4822 116 83864		10k 5% 0,5W
3270	4822 117 11342		0R33 5% 2W
3271	4822 050 11002		1k 1% 0,4W
3272	4822 116 52263		2k7 5% 0,5W
3273	4822 116 52244		15k 5% 0,5W
3274	4822 116 52271		33k 5% 0,5W
3275	4822 116 52271		33k 5% 0,5W
3278	4822 116 52256		2k2 5% 0,5W
3280	4822 116 52239		120k 5% 0,5W
3281	4822 116 83864		10k 5% 0,5W
3282	4822 052 10479	⚠	47R 5% 0,33W
3285	4822 116 52269		3k3 5% 0,5W
3286	4822 116 52269		3k3 5% 0,5W
3287	4822 116 52257		22k 5% 0,5W
3288	4822 052 10479	⚠	47R 5% 0,33W
3289	4822 052 10479	⚠	47R 5% 0,33W
3290	4822 117 12063		NTC DC 5W 10k 5%
3295	4822 116 83872		220R 5% 0,5W
3298	4822 116 52219		330R 5% 0,5W
3299	4822 116 52219		330R 5% 0,5W
3300	4822 052 10568	⚠	5R60 5% 0,33W
3302	4822 116 83884		47k 5% 0,5W
3304	4822 116 83884		47k 5% 0,5W
3305	4822 116 52257		22k 5% 0,5W
3306	4822 116 83882		39k 5% 0,5W
3309	4822 116 52271		33k 5% 0,5W
3312	4822 116 83864		10k 5% 0,5W
3313	4822 050 11002		1k 1% 0,4W
3315	4822 116 52291		56k 5% 0,5W
3316	4822 116 83884		47k 5% 0,5W
3317	4822 052 10109	⚠	10R 5% 0,33W
3321	4822 116 83864		10k 5% 0,5W
3322	4822 116 83864		10k 5% 0,5W
3323	4822 116 52234		100k 5% 0,5W
3324	4822 116 83864		10k 5% 0,5W
3325	4822 116 52207		1k2 5% 0,5W
3326	4822 116 52207		1k2 5% 0,5W
3327	4822 116 52291		56k 5% 0,5W
3328	4822 116 52291		56k 5% 0,5W
3329	4822 116 52226		560R 5% 0,5W

ELECTRICAL PARTS LIST - SUPPLY & LEFT/RIGHT AMPLIFIER BOARD

RESISTORS

3329	4822 116 52228		680R 5% 0,5W
3330	4822 116 52228		680R 5% 0,5W
3331	4822 116 52291		56k 5% 0,5W
3332	4822 116 52291		56k 5% 0,5W
3333	4822 052 10479	⚠	47R 5% 0,33W
3334	4822 052 10479	⚠	47R 5% 0,33W
3335	4822 116 52243		1k5 5% 0,5W
3336	4822 116 52243		1k5 5% 0,5W
3337	4822 050 11002		1k 1% 0,4W
3338	4822 050 11002		1k 1% 0,4W
3339	4822 113 80633	⚠	0R1 5% 3W
3340	4822 113 80633	⚠	0R1 5% 3W
3345	4822 116 52234		100k 5% 0,5W
3346	4822 116 83864		10k 5% 0,5W
3347	4822 116 52271		33k 5% 0,5W
3348	4822 116 83872		220R 5% 0,5W
3350	4822 050 11002		1k 1% 0,4W
3351	4822 116 52234		100k 5% 0,5W
3352	4822 116 52234		100k 5% 0,5W
3353	4822 116 52257		22k 5% 0,5W
3358	4822 050 11002	⚠	1k 1% 0,4W
3363	4822 053 10478	⚠	4R70 5% 1W
3364	4822 053 10478	⚠	4R70 5% 1W
3365	4822 116 52234		100k 5% 0,5W
3365	4822 116 52304		82k 5% 0,5W
3366	4822 116 52234		100k 5% 0,5W
3366	4822 116 52304		82k 5% 0,5W
3367	4822 116 83884		47k 5% 0,5W
3368	4822 116 83884		47k 5% 0,5W
3369	4822 116 83884		47k 5% 0,5W
3370	4822 116 83884		47k 5% 0,5W
3383	4822 116 83884		47k 5% 0,5W
3384	4822 116 83884		47k 5% 0,5W
3386	4822 116 83961		6k8 5%
3387	4822 116 83864		10k 5% 0,5W
3388	4822 116 83864		10k 5% 0,5W

COILS & FILTERS

5321	4822 157 70599	IND FXD BEAD EMI
5322	4822 157 70599	IND FXD BEAD EMI

DIODES

6252	5322 130 80686		1N5392
6255	4822 130 11139	⚠	GBU8D
6260	5322 130 80686		1N5392
6261	5322 130 80686		1N5392
6262	5322 130 80686		1N5392
6263	5322 130 80686		1N5392
6264	4822 130 61219		BZX79-B10
6270	4822 130 30621		1N4148
6271	4822 130 30621		1N4148
6281	4822 130 31878		1N4003G
6284	4822 130 34173		BZX79-B5V6
6289	4822 130 34281		BZX79-B15
6290	4822 130 34281		BZX79-B15
6292	4822 130 30621		1N4148
6293	4822 130 34382		BZX79-B8V2
6294	5322 130 80686		1N5392
6295	4822 130 30621		1N4148
6298	4822 130 34278		BZX79-B6V8
6299	4822 130 30621		1N4148
6301	4822 130 30621		1N4148
6302	5322 130 31504		BZX79-B3V3
6337	4822 130 30621		1N4148
6339	4822 130 30621		1N4148
6360	4822 130 34281		BZX79-B15

TRANSISTORS & INTEGRATED CIRCUITS

7251	4822 130 10812	BDX53BFI
7252	4822 130 40959	BC547B
7253	4822 130 40959	BC547B
7255	4822 130 40959	BC547B
7260	4822 130 40959	BC547B
7263	4822 130 40959	BC547B
7265	4822 130 41691	BC556B
7266	4822 130 44568	BC557B
7268	4822 130 40959	BC547B
7280	4822 130 40959	BC547B
7281	4822 209 31841	L7805CP
7282	4822 130 41246	BC327-25
7286	4822 130 41246	BC327-25
7290	4822 130 41246	BC327-25
7323	4822 130 44461	BC546B
7324	4822 130 44461	BC546B
7325	4822 130 40959	BC547B
7326	4822 130 40959	BC547B
7327	4822 130 44461	BC546B
7329	4822 209 17383	STk47-090I
7329	4822 209 17385	STK496-070
7350	4822 130 41691	BC556B

Note : Only the parts mentioned in this list are normal service spare parts.

AF6 BOARD

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BRIEF INTRODUCTION OF THE AF6 BOARD

The AF6 Board consists of the following features :

a. SOFAC IC

SOFAC IC TEA6321 (7511) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I²C Bus from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX.
It also has a MONO input which is tied to ground via a capacitor. In our application, software will switch the input source to previous source MUTE during STANDBY mode and some other occasions where noise from other input source is undesirable.
Note that the input to the SOFAC IC must be ac coupled to prevent 'plop' noise.
Input networks are included to provide appropriate attenuation for various sources.

b. KARAOKE MIC. MIXING

The AF6 Board has provisions which can be configured to cater for one of the following:
NK : Non-Karaoke.
SK : Simple Karaoke which caters for single mic. mixing with additional mic. amplifier board.
FK : Full Karaoke which caters for double mic. mixing with additional mic. amplifier board.

c. DOLBY PRO LOGIC (DPL) INTERFACE

The AF6 Board has provisions which can be configured to cater for Dolby Pro Logic (DPL).

d. LINE OUT

Line out with cinch socket for connection to external amplifier.

e. SUB-WOOFER OUT

Sub-woofer out with cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible surround effect using transistor circuit (7531, 7532, 7533, 7534) to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone Amplifier to drive 32 ohm to 1kohm headphone.

h. CD STANDBY CONTROL

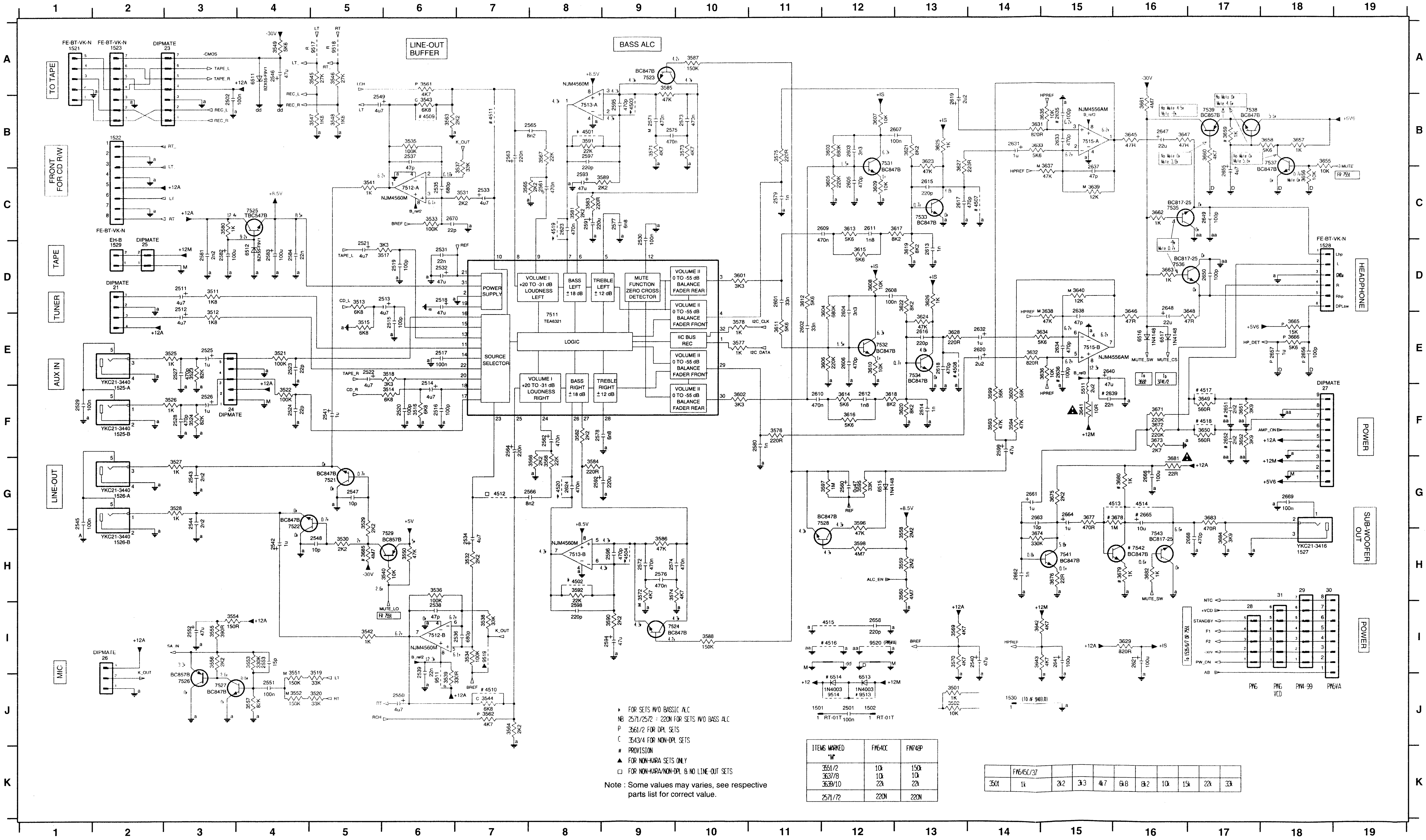
CD Standby Control circuit which switches on the supply to CD servo control IC, HF circuit and the laser light pen in CD mode only.

i. ATTENUATION NETWORK

Attenuation network is provided at the output of the AF6 Board for interfacing with power board of different output power.

AF6 BOARD - CIRCUIT DIAGRAM (PART 1)

21 D2	1502 J12	1530 J14	2519 D6	2530 C9	2541 F5	2552 I3	2573 B10	2584 D4	2602 E11	2613 D13	2631 B14	2647 B16	2662 H14	3512 E3	3523 E3	3534 I7	3545 A5	3556 I3	3567 B8	3578 E10	3590 I9	3601 D10	3612 D11	3623 B13	3635 B15	3647 B16	3660 B17	3676 H15	4502 H8	4515 I12	6515 G12	7522 G4	7534 E13	9514 J12
23 A3	1521 A1	2501 J12	2520 F6	2531 D6	2542 H4	2553 I4	2574 H9	2591 C8	2603 B12	2614 F13	2632 E14	2648 D16	2663 G14	3513 D5	3524 F3	3535 B6	3546 A5	3557 J4	3568 G8	3580 C3	3591 B8	3602 F10	3613 C12	3624 E13	3636 E15	3648 E17	3661 B16	3677 G15	4503 B9	4516 I12	6516 E16	7523 A9	7535 C16	9517 A5
24 F3	1522 B2	2502 B3	2521 D5	2532 D6	2543 G3	2560 G12	2575 B9	2592 G8	2604 D12	2615 C13	2633 B15	2649 C17	2664 G15	3514 F6	3525 E3	3536 H6	3547 B5	3558 H13	3569 I13	3581 C8	3592 H8	3603 B12	3614 F12	3625 B13	3637 C15	3649 F17	3662 C16	3678 G16	4504 H9	4517 F17	6517 E16	7524 I9	7536 D16	9518 A5
25 D2	1523 A2	2511 D3	2522 E5	2533 C7	2544 G3	2561 C8	2576 H9	2593 C8	2605 C12	2616 E13	2634 E15	2650 D17	2665 G16	3515 E5	3526 F3	3537 C7	3548 B5	3559 H13	3570 I13	3582 F8	3593 F14	3604 D12	3615 D12	3626 D13	3638 E15	3650 F17	3663 D16	3679 H16	4507 C14	4518 F17	7511 E8	7525 C4	7537 B18	9519 I7
26 I2	1525-A F2	2512 D3	2523 E4	2534 H7	2545 G1	2562 F8	2577 C9	2594 I9	2606 E12	2617 C13	2635 B15	2651 F17	2666 G16	3516 F6	3527 G3	3538 I7	3549 A4	3560 H13	3571 B9	3583 C8	3594 F14	3605 C12	3616 F12	3627 B13	3639 C15	3651 F17	3665 E18	3680 G16	4508 E13	4519 C8	7512-A C6	7526 J3	7538 B17	9520 I12
27 F18	1525-B F2	2513 D6	2524 F4	2535 C6	2546 A4	2563 B7	2578 F8	2595 B9	2607 B13	2618 E13	2636 E15	2652 F17	2668 H17	3517 D6	3528 G3	3539 J6	3550 H6	3561 A6	3572 H9	3584 G8	3595 G12	3606 E12	3617 C13	3628 E13	3640 D15	3652 F17	3666 E18	3681 G16	4509 B6	4520 G8	7512-B I6	7527 J3	7539 B17	
28 I17	1526-A G2	2514 F6	2525 E3	2536 I7	2547 G5	2564 F7	2579 C11	2596 H9	2608 D12	2619 B13	2637 C15	2655 C17	2669 G18	3518 E6	3529 G5	3540 H6	3551 J4	3562 J7	3573 B10	3585 A9	3596 G12	3607 B12	3618 F12	3629 I16	3641 F15	3655 B18	3671 F16	3682 H16	4510 J7	5511 F15	7513-A B8	7528 G11	7541 H15	
29 H18	1526-B H2	2515 E6	2526 F3	2537 B6	2548 H5	2565 B8	2580 F11	2597 B8	2609 C12	2620 E14	2638 E15	2656 E18	2670 C6	3519 J5	3530 H5	3541 C5	3552 J4	3563 B6	3574 H9	3586 H9	3597 G12	3608 D12	3619 D13	3631 B14	3642 I14	3656 C18	3672 F16	3683 G17	4511 B7	6511 A4	7513-B H8	7529 H5	7542 H16	
30 H18	1527 H18	2516 F6	2527 E3	2538 I6	2549 B5	2566 G8	2581 D3	2598 I8	2610 F11	2621 I16	2639 F15	2657 E18	3501 J13	3520 J5	3531 C7	3542 I5	3553 I4	3564 J7	3575 B11	3587 A10	3598 H12	3609 C12	3620 F13	3632 E14	3643 I14	3657 B18	3673 F16	3684 H17	4512 G7	6512 D4	7515-A B15	7531 B12	7543 H16	
31 H18	1528 D18	2517 E6	2528 F3	2539 I6	2550 J6	2571 B9	2582 D3	2599 F14	2611 C12	2623 C8	2640 E15	2658 I12	3502 J13	3521 E4	3532 H7	3543 B6	3554 I3	3565 C7	3576 F11	3588 I10	3599 F14	3610 E12	3621 B13	3633 B14	3645 B16	3658 B18	3674 H14	3685 H5	4513 G16	6513 J12	7515-B E15	7532 E12	9511 J6	
1501 J12	1529 D2	2518 D6	2529 F1	2540 I14	2551 J4	2572 H9	2583 D4	2601 D11	2612 F12	2624 G8	2641 I15	2661 G14	3511 D3	3522 F4	3533 C6	3544 J7	3555 I3	3566 G8	3577 E10	3589 C9	3600 F14	3611 E11	3622 D13	3634 E15	3646 E16	3659 B17	3675 G15	4501 B8	4514 G16	6514 J12	7521 G5	7533 C13	9513 J12	


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
A B C D E F G H I J K
TO TAPE
FE-BT-VK-N 1521
FE-BT-VK-N 1523
DIPMATE 23
FRONT FOR CD R/W
1522
FE-BT-VK-N
TAPE
EH-B 1529
DIPMATE 25
TUNER
DIPMATE 21
AUX IN
YKC21-3440 1525-A
YKC21-3440 1525-B
24 DIPMATE
LINE-OUT
YKC21-3440 1526-A
YKC21-3440 1526-B
MIC
DIPMATE 26
LINE-OUT BUFFER
BASS ALC
NJM4560M
7512-A
7512-B
7513-A
7513-B
POWER SUPPLY
SOURCE SELECTOR
VOLUME I +20 TO -31 dB LOUDNESS LEFT
BASS LEFT ±18 dB
TREBLE LEFT ±12 dB
MUTE FUNCTION ZERO CROSS DETECTOR
VOLUME II 0 TO -55 dB BALANCE FADER REAR
VOLUME II 0 TO -55 dB BALANCE FADER FRONT
7511 TEA6321
LOGIC
IIC BUS REC
VOLUME I +20 TO -31 dB LOUDNESS RIGHT
BASS RIGHT ±18 dB
TREBLE RIGHT ±12 dB
I2C_CLK
I2C_DATA
NJM4556AM
7515-A
7515-B
HEADPHONE
FE-BT-VK-N 1528
POWER
DIPMATE 27
SUB-WOOFER OUT
YKC21-3416 1527
POWER
NTC
+VCD
STANDBY
PW_ON
AB
PW6
PW6 VCD
PW4-99
PW6VA
+12
+12M
1N4003 9514
1N4003 # 9513
1501
2501
1502
RT-01T
100n

- * FOR SETS W/O BASSIC ALC
- NB 2571/2572 = 220N FOR SETS W/O BASS ALC
- P 3561/2 FOR DPL SETS
- C 3543/4 FOR NON-DPL SETS
- # PROVISION
- ▲ FOR NON-KARA SETS ONLY
- □ FOR NON-KARA/NON-DPL & NO LINE-OUT SETS

Note : Some values may varies, see respective parts list for correct value.

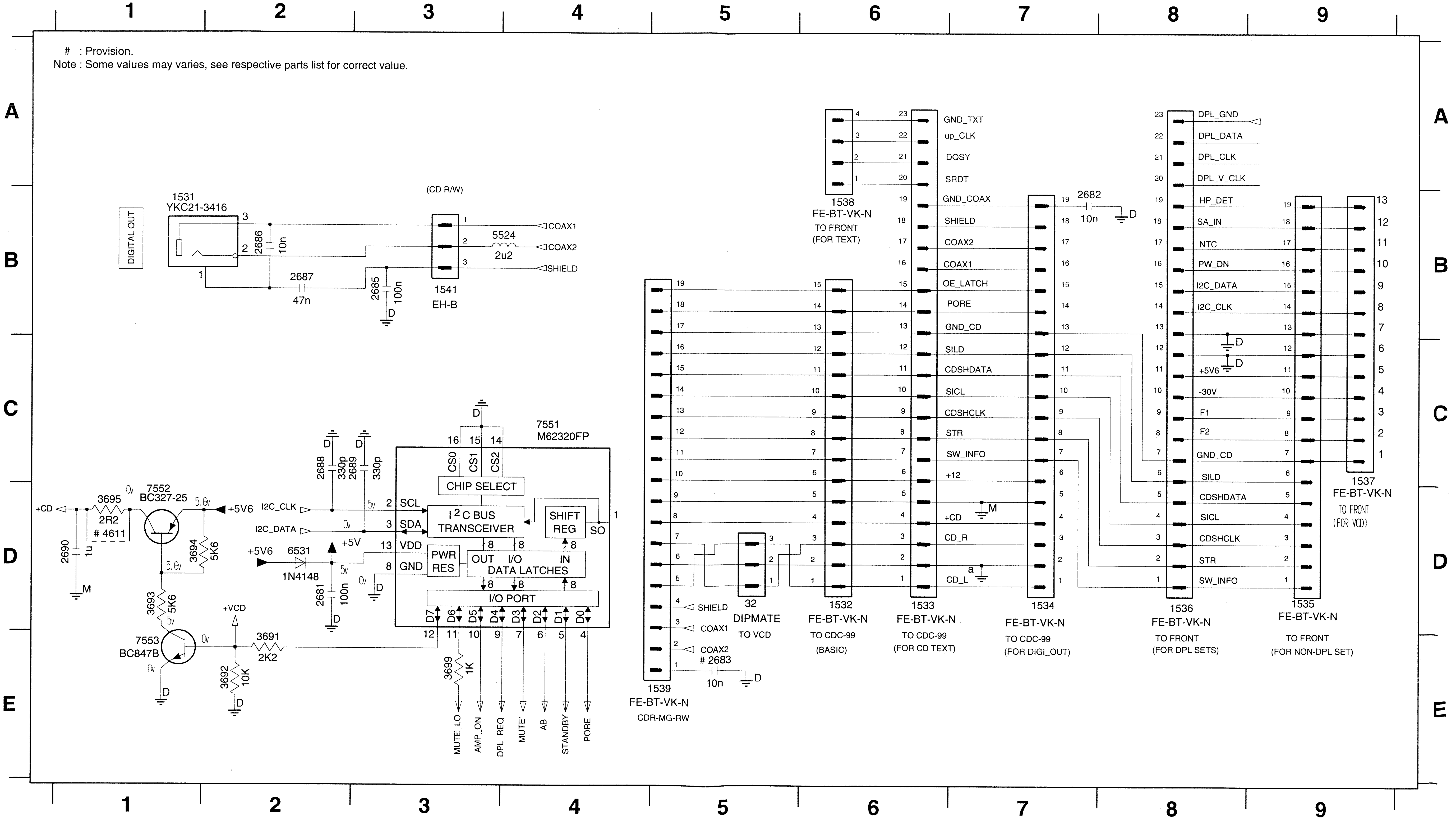
ITEMS MARKED "M"	FW540C	FW748P
3551/2 3637/8 3639/10	10k 10k 22k	150k 10k 22k
2571/72	220N	220N

	FW545C/37									
3501	1k	2k2	3k3	4k7	6k8	8k2	10k	15k	22k	33k

AF6 BOARD - CIRCUIT DIAGRAM (PART 2)

32 D5	1532 D6	1534 D7	1536 D8	1538 B6	1541 B3	2682 B7	2685 B3	2687 B2	2689 C3	3691 E2	3693 D1	3695 D1	4611 D1	6531 D2	7552 D1
1531 B1	1533 D6	1535 D9	1537 C9	1539 E5	2681 D2	2683 E5	2686 B2	2688 C2	2690 D1	3692 E2	3694 D1	3699 E3	5524 B4	7551 C4	7553 E1

# : Provision.
Note : Some values may varies, see respective parts list for correct value.


1 2 3 4 5 6 7 8 9
A B C D E
DIGITAL OUT
1531
YKC21-3416
2686 10n
2687 47n
2685 100n
(CD R/W)
1541
EH-B
5524 2u2
COAX1
COAX2
SHIELD
1538
FE-BT-VK-N
TO FRONT
(FOR TEXT)
GND_TXT
up_CLK
DQSY
SRDT
GND_COAX
OE_LATCH
PORE
GND_CD
SILD
CDSHDATA
SICL
CDSHCLK
STR
SW_INFO
+12
+CD
CD_R
CD_L
2682 10n
DPL_GND
DPL_DATA
DPL_CLK
DPL_V_CLK
HP_DET
SA_IN
NTC
PW_DN
I2C_DATA
I2C_CLK
+5V6
-30V
F1
F2
1537
FE-BT-VK-N
TO FRONT
(FOR VCD)
1539
FE-BT-VK-N
CDR-MG-RW
# 2683 10n
32
DIPMATE
TO VCD
1532
FE-BT-VK-N
TO CDC-99
(BASIC)
1533
FE-BT-VK-N
TO CDC-99
(FOR CD TEXT)
1534
FE-BT-VK-N
TO CDC-99
(FOR DIGI_OUT)
1536
FE-BT-VK-N
TO FRONT
(FOR DPL SETS)
1535
FE-BT-VK-N
TO FRONT
(FOR NON-DPL SET)
7551
M62320FP
CS0 CS1 CS2
CHIP SELECT
I2C BUS TRANSCEIVER
SHIFT REG
SO
SCL SDA VDD GND
PWR RES
OUT I/O IN DATA LATCHES
I/O PORT
D7 D6 D5 D4 D3 D2 D1 D0
2688 330p
2689 330p
I2C_CLK
I2C_DATA
+5V6
6531 1N4148
+5V
2681 100n
+CD
3695 2R2
# 4611
7552 BC327-25
2690 1u
3694 5K6
3693 5K6
7553 BC847B
+VCD
3691 2K2
3692 10K
3699 1K
MUTE_LO
AMP_ON
DPL_REQ
MUTE'
AB
STANDBY
PORE
D
M

ELECTRICAL PARTS LIST - AF6 BOARD

MISCELLANEOUS

1523	4822 267 10953	Flex Connector 7P
1525	4822 267 20452	Cinch Socket - Aux in
1526	4822 267 20452	Cinch Socket - Line-out
1527	4822 267 31729	Cinch Socket - Sub-Woofer out
1528	4822 267 10731	Flex Connector 6P
1531	4822 267 31729	Cinch Socket - Digital out
1534	4822 265 11553	Flex Connector 19P
1535	4822 265 11553	Flex Connector 19P
1542	4822 267 10731	Flex Connector 6P
1543	4822 265 11529	Headphone Socket

CAPACITORS

2501	4822 126 13196	100nF 10% 25V
2511	4822 124 40769	4,7µF 20% 100V
2512	4822 124 40769	4,7µF 20% 100V
2513	4822 124 40769	4,7µF 20% 100V
2514	4822 124 40769	4,7µF 20% 100V
2515	5322 122 32531	100pF 5% 50V
2516	5322 122 32531	100pF 5% 50V
2517	4822 126 13196	100nF 10% 25V
2518	4822 124 40433	47µF 20% 25V
2519	5322 122 32531	100pF 5% 50V
2520	5322 122 32531	100pF 5% 50V
2521	4822 124 40769	4,7µF 20% 100V
2522	4822 124 40769	4,7µF 20% 100V
2523	5322 122 32658	22pF 5% 50V
2524	5322 122 32658	22pF 5% 50V
2525	4822 124 40242	1µF 20% 63V
2526	4822 124 40242	1µF 20% 63V
2527	5322 122 34099	470pF 10% 63V
2528	5322 122 34099	470pF 10% 63V
2529	4822 126 10002	100nF 20% 25V
2530	4822 126 13196	100nF 10% 25V
2531	4822 122 33809	22nF 20% 50V
2532	4822 124 40433	47µF 20% 25V
2533	4822 124 40769	4,7µF 20% 100V
2534	4822 124 40769	4,7µF 20% 100V
2535	4822 122 32535	680pF 10% 63V
2536	4822 122 32535	680pF 10% 63V
2537	4822 126 13692	47pF 1% 63V
2538	4822 126 13692	47pF 1% 63V
2539	4822 122 33809	22nF 20% 50V
2540	4822 124 40433	47µF 20% 25V
2541	4822 124 40242	1µF 20% 63V
2542	4822 124 40242	1µF 20% 63V
2543	4822 122 33175	2,2nF 20% 50V
2544	4822 122 33175	2,2nF 20% 50V
2545	4822 126 10002	100nF 20% 25V
2546	4822 124 41751	47µF 20% 50V
2547	5322 122 32448	10pF 5% 63V
2548	5322 122 32448	10pF 5% 63V
2549	4822 124 40769	4,7µF 20% 100V
2550	4822 124 40769	4,7µF 20% 100V
2551	4822 126 13196	100nF 10% 25V
2552	4822 124 41751	47µF 20% 50V
2553	4822 126 13486	15pF 2% 63V
2560	4822 124 41407	0,47µF 20% 63V
2561	4822 124 41407	0,47µF 20% 63V
2562	4822 124 41407	0,47µF 20% 63V
2563	4822 121 51252	470nF 5% 63V
2564	4822 121 51252	470nF 5% 63V
2565	4822 126 10525	8,2nF 10% 63V
2566	4822 126 10525	8,2nF 10% 63V
2571	4822 121 51252	470nF 5% 63V
2572	4822 121 51252	470nF 5% 63V
2573	4822 121 51252	470nF 5% 63V
2574	4822 121 51252	470nF 5% 63V
2575	4822 121 51252	470nF 5% 63V
2576	4822 121 51252	470nF 5% 63V
2577	5322 122 31866	6,8nF 10% 63V
2578	5322 122 31866	6,8nF 10% 63V
2579	5322 122 34123	1nF 10% 50V
2580	5322 122 34123	1nF 10% 50V
2581	4822 122 33175	2,2nF 20% 50V
2582	4822 124 81029	100µF 20% 25V
2583	4822 124 81029	100µF 20% 25V
2584	4822 122 33809	22nF 20% 50V
2591	4822 124 22263	220µF 20% 25V
2592	4822 124 22263	220µF 20% 25V
2593	4822 124 40433	47µF 20% 25V
2594	4822 124 40433	47µF 20% 25V
2595	5322 122 34099	470pF 10% 63V
2596	5322 122 34099	470pF 10% 63V
2597	4822 122 33575	220pF 5% 63V
2598	4822 122 33575	220pF 5% 63V
2599	4822 124 41751	47µF 20% 50V
2601	4822 126 12105	33nF 5% 50V
2602	4822 126 12105	33nF 5% 50V
2603	4822 122 33891	3,3nF 10% 63V
2604	4822 122 33891	3,3nF 10% 63V
2605	5322 122 34099	470pF 10% 63V
2606	5322 122 34099	470pF 10% 63V
2607	4822 126 13196	100nF 10% 25V
2608	4822 126 13196	100nF 10% 25V
2609	4822 121 51252	470nF 5% 63V
2610	4822 121 51252	470nF 5% 63V
2611	4822 126 10847	1,8nF 10% 63V
2612	4822 126 10847	1,8nF 10% 63V
2613	5322 122 34123	1nF 10% 50V
2614	5322 122 34123	1nF 10% 50V
2615	4822 122 33575	220pF 5% 63V
2616	4822 122 33575	220pF 5% 63V
2617	5322 122 34099	470pF 10% 63V
2618	5322 122 34099	470pF 10% 63V

ELECTRICAL PARTS LIST - AF6 BOARD

2619	4822 124 41576	2,2µF 20% 50V
2620	4822 124 41576	2,2µF 20% 50V
2621	4822 124 81029	100µF 20% 25V
2623	4822 126 13482	470nF +80/-20% 16V
2624	4822 126 13482	470nF +80/-20% 16V
2631	4822 124 40242	1µF 20% 63V
2632	4822 124 40242	1µF 20% 63V
2633	5322 122 34099	470pF 10% 63V
2634	5322 122 34099	470pF 10% 63V
2637	4822 126 13692	47pF 1% 63V
2638	4822 126 13692	47pF 1% 63V
2639	4822 122 33809	22nF 20% 50V
2640	4822 124 40433	47µF 20% 25V
2641	4822 124 81029	100µF 20% 25V
2647	4822 124 81151	22µF 50V
2648	4822 124 81151	22µF 50V
2649	5322 122 32531	100pF 5% 50V
2649	4822 126 10002	100nF 20% 25V
2650	5322 122 32531	100pF 5% 50V
2655	4822 124 40769	4,7µF 20% 100V
2658	4822 122 33575	220pF 5% 63V
2661	4822 124 40242	1µF 20% 63V
2662	5322 122 34123	1nF 10% 50V
2663	5322 122 32448	10pF 5% 63V
2664	4822 124 40242	1µF 20% 63V
2666	4822 124 81029	100µF 20% 25V
2668	5322 122 34099	470pF 10% 63V
2669	4822 126 10002	100nF 20% 25V
2681	4822 126 13196	100nF 10% 25V
2682	4822 122 33808	10nF 20% 50V
2685	4822 126 10002.	100nF 20% 25V
2686	4822 122 33808	10nF 20% 50V
2687	4822 122 33797	47nF 20% 50V
2688	4822 122 33805	330pF 10% 63V
2689	4822 122 33805	330pF 10% 63V
2690	4822 126 13836	1µF 16V
2691	4822 122 33809	22nF 20% 50V
2692	4822 122 33809	22nF 20% 50V
2694	4822 126 10002	100nF 20% 25V

RESISTORS

3501	4822 051 10102	1k 2% 0,25W
3502	4822 117 10833	10k 1% 0,1W
3511	4822 051 20182	1k8 5% 0,1W
3512	4822 051 20182	1k8 5% 0,1W
3513	4822 116 83961	6k8 5%
3514	4822 117 11507	6k8 1% 0,1W
3515	4822 117 11507	6k8 1% 0,1W
3516	4822 117 11507	6k8 1% 0,1W
3517	4822 051 20332	3k3 5% 0,1W
3518	4822 051 20332	3k3 5% 0,1W
3519	4822 051 20333	33k 5% 0,1W
3520	4822 051 20333	33k 5% 0,1W
3521	4822 116 52234	100k 5% 0,5W
3522	4822 116 52234	100k 5% 0,5W
3523	4822 117 11149	82k 1% 0,1W
3524	4822 117 11149	82k 1% 0,1W
3525	4822 051 10102	1k 2% 0,25W
3526	4822 051 10102	1k 2% 0,25W
3527	4822 051 10102	1k 2% 0,25W
3528	4822 051 10102	1k 2% 0,25W
3529	4822 117 11449	2k2 1% 0,1W
3530	4822 116 52256	2k2 5% 0,5W
3531	4822 116 52256	2k2 5% 0,5W
3532	4822 116 52256	2k2 5% 0,5W
3533	4822 116 52234	100k 5% 0,5W
3534	4822 116 52234	100k 5% 0,5W
3535	4822 051 20104	100k 5% 0,1W
3536	4822 051 20104	100k 5% 0,1W
3537	4822 051 20333	33k 5% 0,1W
3538	4822 051 20333	33k 5% 0,1W
3540	4822 117 10833	10k 1% 0,1W
3541	4822 051 10102	1k 2% 0,25W
3542	4822 051 10102	1k 2% 0,25W
3543	4822 117 11507	6k8 1% 0,1W
3544	4822 117 11507	6k8 1% 0,1W
3545	4822 051 20273	27k 5% 0,1W
3546	4822 116 52264	27k 5% 0,5W
3547	4822 051 20182	1k8 5% 0,1W
3548	4822 051 20182	1k8 5% 0,1W
3549	4822 051 20562	5k6 5% 0,1W
3550	4822 117 10834	47k 1% 0,1W
3551	4822 051 20154	150k 5% 0,1W
3552	4822 051 20154	150k 5% 0,1W
3553	4822 051 20334	330k 5% 0,1W
3554	4822 117 10353	150R 1% 0,1W
3555	4822 051 20391	390R 5% 0,1W
3556	4822 117 11449	2k2 1% 0,1W
3557	4822 117 11149	82k 1% 0,1W
3558	4822 051 20225	2M2 5% 0,1W
3559	4822 051 20225	2M2 5% 0,1W
3560	4822 051 20475	4M7 5% 0,1W
3563	4822 117 11449	2k2 1% 0,1W
3564	4822 117 11449	2k2 1% 0,1W
3565	4822 117 11449	2k2 1% 0,1W
3566	4822 117 11449	2k2 1% 0,1W
3567	4822 051 20223	22k 5% 0,1W
3568	4822 051 20223	22k 5% 0,1W
3569	4822 051 20472	4k7 5% 0,1W
3570	4822 051 20472	4k7 5% 0,1W
3571	4822 051 20472	4k7 5% 0,1W
3572	4822 051 20472	4k7 5% 0,1W
3573	4822 051 20472	4k7 5% 0,1W
3574	4822 051 20472	4k7 5% 0,1W

RESISTORS

3575	4822 117 11503	220R 1% 0,1W
3576	4822 117 11503	220R 1% 0,1W
3577	4822 050 11002	1k 1% 0,4W
3578	4822 050 11002	1k 1% 0,4W
3580	4822 051 10102	1k 2% 0,25W
3581	4822 117 11449	2k2 1% 0,1W
3582	4822 116 52256	2k2 5% 0,5W
3583	4822 117 11503	220R 1% 0,1W
3584	4822 117 11503	220R 1% 0,1W
3585	4822 117 10834	47k 1% 0,1W
3586	4822 117 10834	47k 1% 0,1W
3587	4822 051 20154	150k 5% 0,1W
3588	4822 051 20154	150k 5% 0,1W
3589	4822 117 11449	2k2 1% 0,1W
3590	4822 117 11449	2k2 1% 0,1W
3591	4822 051 20223	22k 5% 0,1W
3592	4822 051 20223	22k 5% 0,1W
3593	4822 116 83884	47k 5% 0,5W
3594	4822 117 10834	47k 1% 0,1W
3595	4822 051 20333	33k 5% 0,1W
3596	4822 117 10834	47k 1% 0,1W
3597	4822 051 20105	1M 5% 0,1W
3598	4822 051 20475	4M7 5% 0,1W
3599	4822 117 11148	56k 1% 0,1W
3600	4822 117 11148	56k 1% 0,1W
3601	4822 051 20332	3k3 5% 0,1W
3602	4822 051 20332	3k3 5% 0,1W
3603	4822 051 20684	680k 5% 0,1W
3604	4822 051 20684	680k 5% 0,1W
3605	4822 117 13579	220k 1% 0,1W
3606	4822 117 13579	220k 1% 0,1W
3607	4822 116 83864	10k 5% 0,5W
3608	4822 116 83864	10k 5% 0,5W
3609	4822 117 10833	10k 1% 0,1W
3610	4822 117 10833	10k 1% 0,1W
3611	4822 051 20562	5k6 5% 0,1W
3612	4822 051 20562	5k6 5% 0,1W
3613	4822 051 20562	5k6 5% 0,1W
3614	4822 051 20562	5k6 5% 0,1W
3615	4822 051 20562	5k6 5% 0,1W
3616	4822 051 20562	5k6 5% 0,1W
3617	4822 051 20822	8k2 5% 0,1W
3618	4822 051 20822	8k2 5% 0,1W
3619	4822 051 20822	8k2 5% 0,1W
3620	4822 051 20822	8k2 5% 0,1W
3621	4822 051 20822	8k2 5% 0,1W
3622	4822 051 20822	8k2 5% 0,1W
3623	4822 117 10834	47k 1% 0,1W
3624	4822 117 10834	47k 1% 0,1W
3625	4822 051 10102	1k 2% 0,25W
3626	4822 051 10102	1k 2% 0,25W
3627	4822 117 11503	220R 1% 0,1W
3628	4822 117 11503	220R 1% 0,1W
3629	4822 117 11454	820R 1% 0,1W
3631	4822 116 52231	820R 5% 0,5W
3632	4822 116 52231	820R 5% 0,5W
3633	4822 051 20562	5k6 5% 0,1W
3634	4822 051 20562	5k6 5% 0,1W
3635	4822 117 10833	10k 1% 0,1W
3636	4822 117 10833	10k 1% 0,1W
3637	4822 117 10834	47k 1% 0,1W
3638	4822 117 10834	47k 1% 0,1W
3639	4822 117 11383	12k 1% 0,1W
3640	4822 117 11383	12k 1% 0,1W
3641	4822 052 10109 ⚠	10R 5% 0,33W
3642	4822 051 20472	4k7 5% 0,1W
3643	4822 051 20472	4k7 5% 0,1W
3645	4822 051 20479	47R 5% 0,1W
3646	4822 051 20479	47R 5% 0,1W
3647	4822 051 20479	47R 5% 0,1W
3648	4822 051 20479	47R 5% 0,1W
3649	4822 051 20331	330R 5% 0,1W
3650	4822 051 20331	330R 5% 0,1W
3651	4822 051 20392	3k9 5% 0,1W
3652	4822 051 20392	3k9 5% 0,1W
3655	4822 116 83864	10k 5% 0,5W
3656	4822 117 10833	10k 1% 0,1W
3657	4822 051 10102	1k 2% 0,25W
3658	4822 051 20562	5k6 5% 0,1W
3660	4822 051 20472	4k7 5% 0,1W
3661	4822 051 20475	4M7 5% 0,1W
3662	4822 051 10102	1k 2% 0,25W
3663	4822 051 10102	1k 2% 0,25W
3671	4822 117 13579	220k 1% 0,1W
3672	4822 117 13579	220k 1% 0,1W
3673	4822 117 12955	2k7 1% 0,1W
3674	4822 051 20334	330k 5% 0,1W
3675	4822 117 11449	2k2 1% 0,1W
3676	4822 051 20229	22R 5% 0,1W
3677	4822 051 20471	470R 5% 0,1W
3681	4822 052 10229 ⚠	22R 5% 0,33W
3682	4822 051 10102	1k 2% 0,25W
3683	4822 051 20471	470R 5% 0,1W
3684	4822 051 20392	3k9 5% 0,1W
3691	4822 117 11449	2k2 1% 0,1W
3692	4822 117 10833	10k 1% 0,1W
3693	4822 051 20562	5k6 5% 0,1W
3694	4822 051 20562	5k6 5% 0,1W
3695	4822 051 20228	2R2 5% 0,1W
3699	4822 050 11002	1k 1% 0,4W
3768	4822 050 11002	1k 1% 0,4W
4513	4822 051 20008	0R Jumper 0805
4514	4822 051 20008	0R Jumper 0805
4515	4822 051 20008	0R Jumper 0805

4516	4822 051 20008	0R Jumper 0805
4522	4822 051 20008	0R Jumper 0805
4523	4822 051 20008	0R Jumper 0805
4524	4822 051 20008	0R Jumper 0805
4525	4822 051 20008	0R Jumper 0805
4527	4822 051 20008	0R Jumper 0805
4528	4822 051 20008	0R Jumper 0805
4529	4822 051 20008	0R Jumper 0805
4530	4822 051 20008	0R Jumper 0805
4531	4822 051 20008	0R Jumper 0805
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 20008	0R Jumper 0805
4534	4822 051 20008	0R Jumper 0805
4535	4822 051 20008	0R Jumper 0805
4536	4822 051 20008	0R Jumper 0805
4537	4822 051 20008	0R Jumper 0805
4538	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4540	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4543	4822 051 20008	0R Jumper 0805
4544	4822 051 20008	0R Jumper 0805
4545	4822 051 20008	0R Jumper 0805
4546	4822 051 20008	0R Jumper 0805
4547	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4549	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4556	4822 051 20008	0R Jumper 0805
4557	4822 051 20008	0R Jumper 0805
4558	4822 051 20008	0R Jumper 0805
4559	4822 051 20008	0R Jumper 0805
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 20008	0R Jumper 0805
4563	4822 051 20008	0R Jumper 0805
4565	4822 051 20008	0R Jumper 0805
4566	4822 051 20008	0R Jumper 0805
4567	4822 051 20008	0R Jumper 0805
4571	4822 051 20008	0R Jumper 0805
4573	4822 051 20008	0R Jumper 0805
4580	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5511	4822 157 62552	Coil 2,2μH 5%
5523	4822 157 62552	Coil 2,2μH 5%
5524	4822 157 10586	Coil 2,2μH 10%
5531	4822 157 62552	Coil 2,2μH 5%
5532	4822 156 21721	Coil 2,2μH 10%

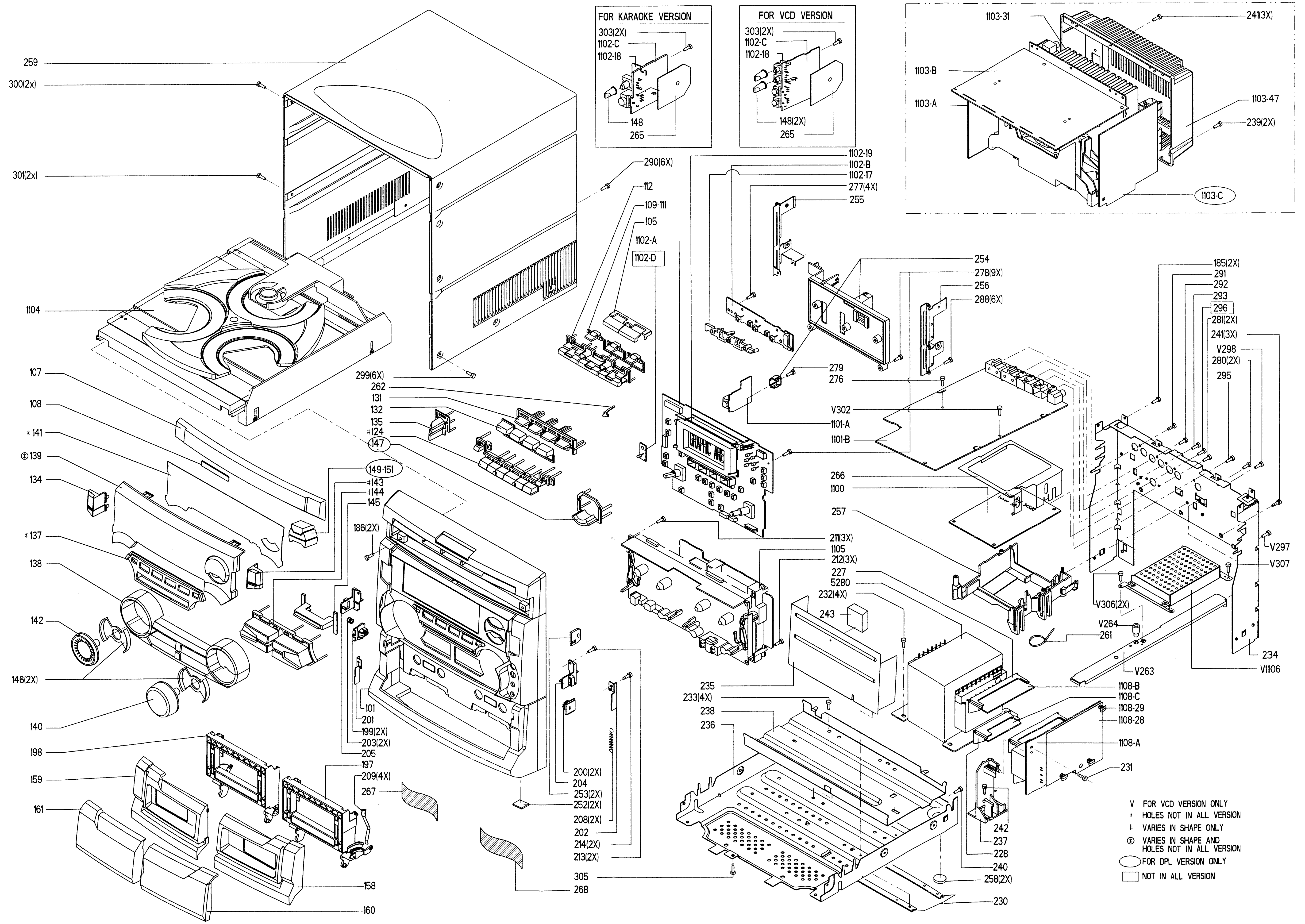
DIODES

6511	4822 130 30862	BZX79-B9V1
6512	4822 130 30862	BZX79-B9V1
6513	4822 130 31878	1N4003G
6515	4822 130 30621	1N4148
6516	4822 130 30621	1N4148
6531	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7511	4822 209 33652	TEA6321T/V1
7512	4822 209 83357	NJM4560M
7513	4822 209 83357	NJM4560M
7515	4822 209 31378	NJM4556MB
7521	4822 130 60511	BC847B
7522	4822 130 60511	BC847B
7523	4822 130 60511	BC847B
7524	4822 130 60511	BC847B
7525	4822 130 40959	BC547B
7526	5322 130 60508	BC857B
7527	4822 130 60511	BC847B
7528	4822 130 60511	BC847B
7529	5322 130 60508	BC857B
7531	4822 130 60511	BC847B
7532	4822 130 60511	BC847B
7533	4822 130 60511	BC847B
7534	4822 130 60511	BC847B
7535	4822 130 42804	BC817-25
7536	4822 130 42804	BC817-25
7537	4822 130 60511	BC847B
7538	4822 130 60511	BC847B
7539	5322 130 60508	BC857B
7541	4822 130 60511	BC847B
7543	4822 130 42804	BC817-25
7551	4822 209 17345	M62320FP
7552	4822 130 41246	BC327-25
7553	4822 130 60511	BC847B

Note : Only the parts mentioned in this list are normal service spare parts.


FOR KARAOKE VERSION
303(2X)
1102-C
1102-18
148
265
FOR VCD VERSION
303(2X)
1102-C
1102-18
148(2X)
265
1103-31
241(3X)
1103-B
1103-A
1103-47
239(2X)
1103-C
259
300(2x)
301(2x)
290(6X)
112
109-111
105
1102-19
1102-B
1102-17
277(4X)
255
1102-A
1102-D
254
278(9X)
256
288(6X)
185(2X)
291
292
293
296
281(2X)
241(3X)
V298
280(2X)
295
1104
299(6X)
262
131
132
135
#124
147
279
276
V302
1101-A
1101-B
107
108
* 141
⊛ 139
134
149-151
#143
#144
145
266
1100
257
* 137
186(2X)
211(3X)
1105
212(3X)
V297
V307
138
227
5280
232(4X)
243
V306(2X)
V264
261
234
142
146(2X)
140
101
201
199(2X)
203(2X)
205
235
233(4X)
238
236
V263
V1106
1108-B
1108-C
1108-29
1108-28
1108-A
198
197
209(4X)
267
159
161
158
160
200(2X)
204
253(2X)
252(2X)
208(2X)
202
214(2X)
213(2X)
305
268
231
242
237
228
240
258(2X)
230
V FOR VCD VERSION ONLY
* HOLES NOT IN ALL VERSION
# VARIES IN SHAPE ONLY
⊛ VARIES IN SHAPE AND HOLES NOT IN ALL VERSION
○ FOR DPL VERSION ONLY
☐ NOT IN ALL VERSION

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	4822 459 05254		Cabinet Front
101	4822 459 05253		Cabinet Front /37
105	4822 410 12296		Button CDC Open/Close
107	4822 442 01773		Cover CDC
107	4822 442 01766		Cover CDC /37
108	4822 454 13035		Badge Philips
108	4822 454 13265		Badge (Philips-Magnavox) /37
112	4822 410 12297		Button Set CDC Select
124	3139 117 89230		Button Set Control
131	4822 464 10514		Frame Lightguide Source Sel
132	4822 410 12289		Button Set Source
134	4822 410 12301		Button Standby/Timer
135	4822 410 12302		Button Set Dubbing/Rec
137	4822 442 01772		Cover Orn. Control
138	4822 442 01768		Cover Orn.
139	4822 450 10658		Window Display /21/21M/30
139	4822 450 10693		Window Display /22
139	4822 450 10694		Window Display /37
140	4822 410 12303		Knob Volume
142	4822 273 10368		Jog Rotary
143	4822 442 01769		Cover RDS/NEWS
143	4822 410 12308		Button Set RDS/NEWS /22
144	4822 410 12304		Button Set
148	4822 410 12307		Knob Karaoke
158	4822 443 11163		Cover Cassette Right
159	4822 443 11164		Cover Cassette Left
160	4822 381 12075		Lens Cassette Right
161	4822 381 12074		Lens Cassette Left
197	4822 443 10488		Door Cassette Right
198	4822 443 10487		Door Cassette Left
199	4822 402 10621		Push-Catch
200	4822 529 10322		Damper Assembly
203	4822 492 11344		Spring Compression
204	4822 402 11246		Bracket Right
205	4822 402 11245		Bracket Left
208	4822 492 11345		Spring Tension
209	4822 492 42787		Spring Cassette
252	4822 462 40683		Foot Rubber (SQ)
254	4822 466 12197		Plate Front
258	4822 462 40683		Plate (Foot)
259	4822 426 10807		Cabinet Rear
349	4822 445 10839		Surround Speaker /21/21M/30
350	4822 445 10861		LS Pair To Single /21/21M/30
350	4822 445 10859		LS Pair To Single /22
350	4822 445 10862		LS Pair To Single /37
351	4822 303 50063		FM Aerial
351	4822 320 11094		FM Aerial /37
356	4822 219 10683		Remote Control
356	4822 219 10682		Remote Control /37
384	4822 303 50082		AM Frame Aerial
385	4822 321 10249	⚠	Mains Cord /21/21M/22
385	4822 321 10954	⚠	Mains Cord /30
385	4822 321 11466	⚠	Mains Cord /37
387	4822 736 16734		Instruction For Use /21/21M/30
387	4822 736 16735		Instruction For Use /22
387	4822 736 16733		Instruction For Use /37
1571	4822 320 12702		Flex Cable BD 6P 140mm
1573	4822 320 12654		Flex Cable AD 7P 220mm
1653	4822 320 12703		Flex Cable BD 7P 140mm
1680	4822 320 12656		Flex Cable AD 9P 280mm Folded
1681	4822 320 12704		Flex Cable BD 19P 480mm
5280	4822 146 11146	⚠	Mains Transformer /21/21M
5280	4822 146 11145	⚠	Mains Transformer /30
5280	4822 146 11188	⚠	Mains Transformer /22
5280	4822 146 11191	⚠	Mains Transformer /37

LEFT/RIGHT LOUDSPEAKER BOX BREAKDOWN

4822 240 10384	Woofer 6,25" 6R 100W /21/21M/30
4822 240 10386	Woofer 6,25" 6R 70W /22/37
4822 458 10687	Cloth Frame Assembly
4822 458 10686	Cloth Frame Assembly /37
4822 248 10006	Piezo Wire Assembly
4822 240 10387	Tweeter 2,5" 6R 140W

SURROUND BOX BREAKDOWN

4822 240 10388	Speaker 4" 12R 20W /21/21M/30

Note : Only the parts mentioned in this list are normal service spare parts.

SCREW LISTS - MAIN UNIT

185	D3 x 10
186	D3 x 10
211	D3 x 12
212	D3 x 12
213	D3 x 12
214	D3 x 12
231	D3 x 10
232	M3 x 10
233	M3 x 6
239	M3 x 10
240	D3 x 12
241	M3 x 10
242	M3 x 10
276	D3 x 12
277	D3 x 12
278	D3 x 12
279	M3 x 12
280	D3 x 12
281	D3 x 12
288	D3 x 10
290	M3 x 10
291	D3 x 12
292	D3 x 12
293	D3 x 12
295	D3 x 12
298	M3 x 10
299	M3 x 10
300	M3 x 10
301	M3 x 10
302	M3 x 16
303	D3 x 12
305	M3 x 6